# APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM [GIS] IN PRESUMED TREMATODE INDUCED UVEITIS IN A HOSPITAL BASED POPULATION IN TAMIL NADU

**DISSERTATION SUBMITTED FOR M.S (FINAL) OPHTHALMOLOGY,**

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# CERTIFICATE

Certified that this dissertation entitled "**APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM IN PRESUMED TREMATODE INDUCED UVEITIS IN A HOSPITAL BASED POPULATION IN TAMIL NADU"** submitted for MASTER OF SURGERY [M.S.] Ophthalmology march 2007 to The Tamilnadu Dr. M.G.R. Medical University, is the bonafide work done by **Dr. S. BALA MURUGAN** under our supervision and guidance in the Department of Uvea at Aravind Eye Hospital and Post Graduate Institute Of Ophthalmology, Madurai, during his residency period from May 2004 to March 2007

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# INDEX

## PART-1



## PART-2

# INTRODUCTION

In the southern state of TamilNadu, is located the tertiary eye care centre –Aravind Eye Care System Madurai. In the Department Of Uveitis Services a specific pattern of anterior uveitis prevalent in paediatric population called as Presumed Trematode Induced Uveitis is observed. This disease entity is unique in that it affects children who are located in specific geographic locales with water –body related activities.

In this era of nanotechnology GEOGRAPHIC INFORMATION SYSTEM [GIS] is a new weapon in the armemantorium of scientific research.In GIS we analyse geographic variables using computer generated maps.

In this study we apply GIS as an operational tool to gain new knowledge in this new disease entity, " Presumed Trematode Induced Uveitis" .To gain more insight into this uveitic disease the control group is taken as other paediatric uveitis patients visiting the UVEITIS SERVICES of ARAVIND EYE CARE SYSTEM, Madurai during the same study period.The same GIS - operational variables are also applied in the control group to observe any difference between the two groups.

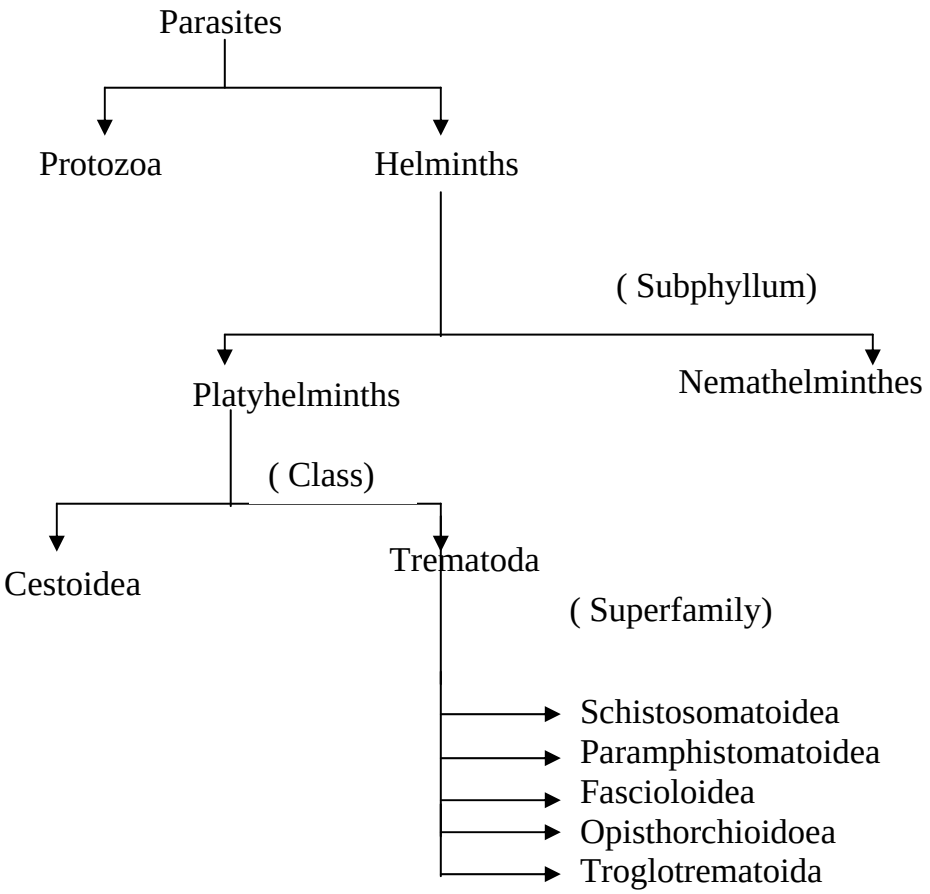
# 2.1 INTRODUCTION TO PRESUMED TREAMATODE INDUCED UVEITIS

### 2.1.1 PRESUMED[1,2]

It is called presumed since the gaps in the life cycle of the exact trematode causing uveitis remains a suspense till now!. It does not fulfill all the Koch's postulate[3] for disease agent causing a disease.

### 2.1.2 BASICS OF TREMATODE[4]:

Parasites are classified as follows:



### 2.1.3 GENERAL CHARACTERS OF TREMATODES[4]

1. Trematodes are leaf–shaped unsegmented flat worms called flukes.
2. Size of the organisms vary from 1mm to several centimeters in length.
3. The organ of attachment are two strong muscular cup-shaped depression called suckers [oral and ventral suckers]
4. Sexes are not separate i.e. each individual worm is a hermaphrodite [monoecious] except the Schistosomes which are unisexual .
5. Body cavity is absent .
6. Alimentary canal is present but incomplete with absent anus.
7. Excretory [“flame cells”] and nervous systems are present.
8. Reproductive system is highly developed and complete.
9. They are oviparous since eggs are liberated.
10. Eggs are operculated and can develop only in water . They do not float in saturated solution of common salt.

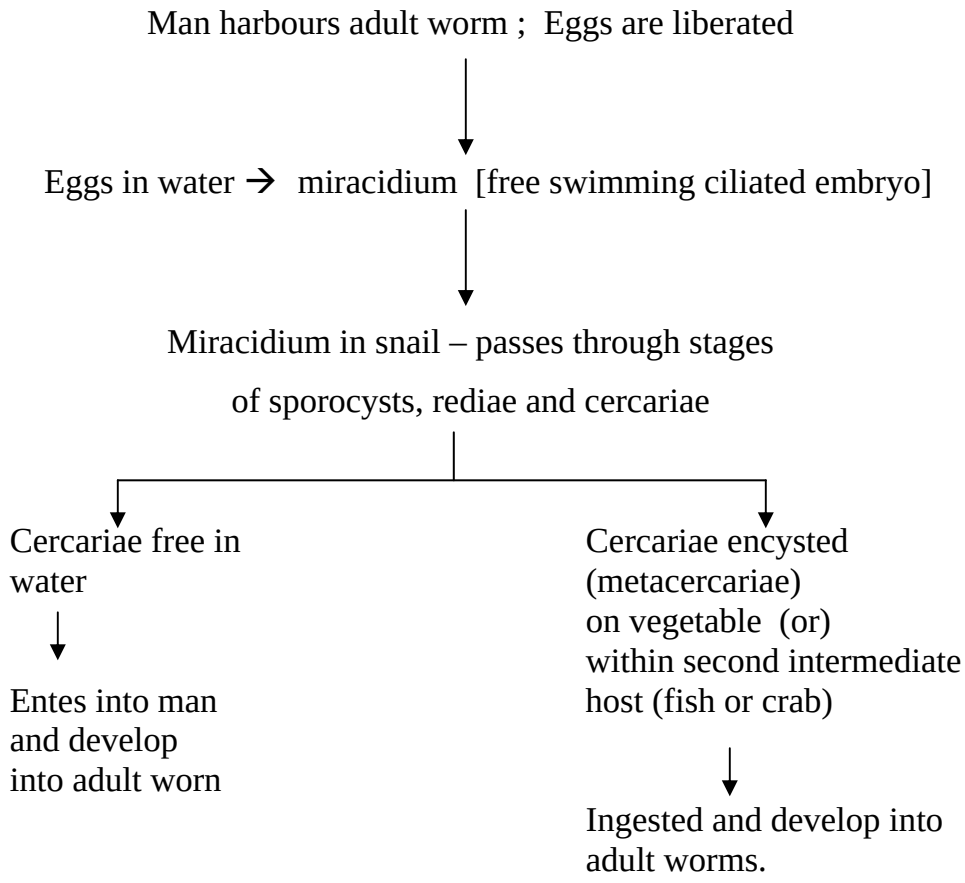
### 2.1.4 LIFE CYCLE OF TREMATODES [4]

Definitive host - Man [harbours adult worm]

Intermediate host - (1) Fresh water snails or

. molluscs for larval development

(2) Second intermediate host [fish or crab] is required for encystment in some trematodes .




**2.1.5 Mode of trematode infections** [4]

1. By ingestion of encysted cercariae in

a. Vegetables
   - Fasciola hepatica.
   - Fasciola buski
   - Watsonus watsoni

b. Fish → Clonorchis sinensis
b. Fish → Heterophyes heterophyes
b. Fish → Montogomyes yokogawai

c. Flesh of crab (or) fish –Paragonimus westermanni

2. Free cercariae penetrating directly through the skin

- Schistosoma hematobium [4,5,6]
- Schistosoma mansoni [4,5,6]
- Schistosoma japonicum [4,5,6]

## 2.1.6 FEATURES OF PRESUMED TREMATODE INDUCED UVEITIS[1,2]

1. Prevalent in a specific geographic locale. Eg. In districts that have large numbers of ponds, lakes, rivers etc .
2. Common in paediatric age group (<16 years)
3. More common in males than in females.
4. Occurs in specific areas where children have water related activities in water habitats ( lakes, ponds, rivers) at a specific time of a day in a specific season where agent – host – environment (disease pyramid) interaction occurs.
5. Predominantly an anterioir uveitis – conjunctival granuloma + anterior uveitis, anterior chamber granuloma + anterior uveitis

6. No case of posterior uveitis has been observed
7. Initial treatment with steroids is rarely effective
8. Treatment with aspiration of Presumed Trematode Induced granuloma with aspiration of granuloma alone with tapering steroids is fairely effective.
9. Recurrences are common when the patients engages in water related activities recurrently.
10. Peer group children are similarly affected.
11. Usually misdiagnosed as idiopathic anterior uveitis and treated by other ophthalmologists with steroids, cycloplegics but refractory to medical treatment.
12. The histopathological examination of the aspirated material from the granuloma showed a well recognized phenomenon called “SPLENDORE HOEPPLI PHENOMENON”.

## 2.1.7 DIFFERENTIAL DIAGNOSIS[1,2]

1. Pingeculitis
2. Anterior scleritis
3. Hansen’s uveitis
4. Tuberculosis uveitis
5. Post traumatic uveitis

## 2.2 SPLENDORE – HOEPPLI PHENOMENON[7]

### 2.2.1. Introduction

Some of the cases of presumed trematode induced uveitis showed a well recognized tissue reaction in which "radiating eosinophilic deposits are present within necrotizing granulomatous nodules". This phenomenon is called as "SPLENDORE HOEPPLI PHENOMENON" .

### 2.2.2 History [8]

- In 1908 Splendore[8] described histologically an amorphous eosinophilic material first described around fungal spores. He believed them to be a new species of "Sporotrichum" that he called as "Sporotrichum asteroids" owing to the radiating pattern of the formation. In 1932 Hoeppli[8] described a eosinophilic fringe around Schistosoma-eggs. He suggested that it represented a reaction between the ova and the surrounding tissue (perhaps through a secretion of the lateral glands, usually of the mature miracidium)

### 2.2.3. Histopathological Examination[8]

- The eosinophilic fringe was surrounded by necrotic material, nuclear remnants, belts of epithelioid cells, large mononuclear cells, giant cells and many eosinophils. It is an eosinophilic granuloma with distinct histologic features.

- [9]Lurine et al reviewed the studies published upto 1963 on Splendore Hoeppli Phenomenon. [10]Von Lichtenberg et al demonstrated the precipitate around the Schistosoma eggs by using immunofluorescent techniques. They found the precipitate to be due to the ova antigen and fixed host globulin that formed an antigen-antibody complex. Hence they suggested that Splendore Hoeppli Phenomenon was an in-vivo antigen-antibody precipitate arising when certain immunologically critical conditions coexists. [11]Williams and associated noted the variability of the incidence of Splendore Hoeppli precipitate in fungal infections and concluded that maximal host reactivity or hypersensitivity were essential for their formation by the in situ reaction of antigen and antibody.

**ELECTRON MICROSCOPIC PICTURE :**

- Electron microscopy picture of this SPLENDORE HOEPPLI PHENOMENON around fungi was described by Williams and associates[11]. They found that it consisted of degenerating cytoplasmic and nuclear debris derived especially from eosinophils, but also from plasma cells, macrophages and lymphocytes, together with amorphous granular materials. They probably represent of antigen- antibody complexes similar to the ones described in electron microscopy of Arthus type of hypersensitivity reactions .

- [13]Ultrastructurally they are composed of
    1. eosinophil granules
    2. mitochondria
    3. lysosomes
    4. fibrin
    5. collagen and
    6. antigen-antibody complexes.
- A striking feature was the presence of eosionphils and Charcot Leyden–crystals[14,15,16] in their acicular and hexagonal forms – derived from eosinophils.
- Gilbert, Khoury and Pore[17] in a study of Splendore Hoeppli Phenomenon in fungal infection [Entomophthora] proved that eosinophilic precipitate contained
    1. phospholipid
    2. acid and neutral lipids
    3. lipofuscin and
    4. diastase – resistant PAS positive and PTAH positive material
- These precipitate stained red with Massons's trichrome stain but stained negatively with Ziehl – Neilson's stain.

### 2.2.5. IMMUNOPEROXIDASE STUDIES[8]

Immunoperoxidase studies showed IgG and IgM as well as $C_3$ complements present within these formations, but other studies[18] have failed to identify immunoglobulins[8] in them .

### 2.2.6. IMMUNOFLORESCENT STUDIES[19,20]

Immunoflorescent studies have demonstrated eosinophilic major basic protein as a significant component of Splendore – Hoeppli phenomenon. This protein which forms the crystalline core of the eosinophil granule is believed to be cytotoxic to parasites[21], the release of cytotoxic major basic protein in response to invading parasites may also cause tissue damage[22].

### 2.2.7. ETIOLOGY

Splendore Hoeppli Phonomenon is associated with

1. various helminthes[8,10,19,20,22]
2. fungi[13,23,24]
3. bacteria [25]
4. silk sutures[26,27] and last but not least
5. no cause [8,18]

# 2.3 BASICS OF GIS

### 2.3.1 GIS – Definition[28]

GIS is a system of management for analysis of geographical data. It includes acquisition, storage, retrieval, analysis and display of geographic data.

### 2.3.2 Components of GIS[28 ,29,30,31,32]

The components of GIS are**:**

1. Spatial database
2. Cartographic display
3. Digitizing analysis
4. Geographic analysis
5. Add-on-modules
    a. Spatial analysis
    b. Decision tools
6. S-plus spatial statistics

2.3.3. DATA [28,29]

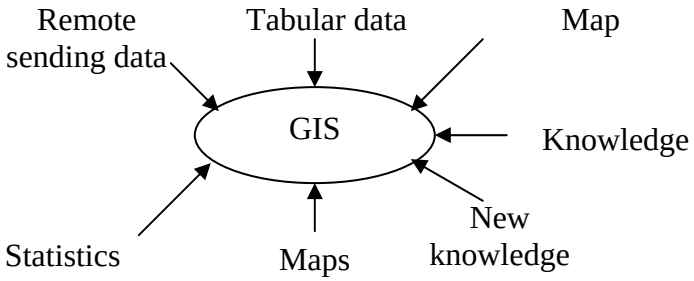
Any information about an object of interest is called as data. It can be classified into geographic and attribute data

Data → Geographic Example : points , objects, lines etc.,

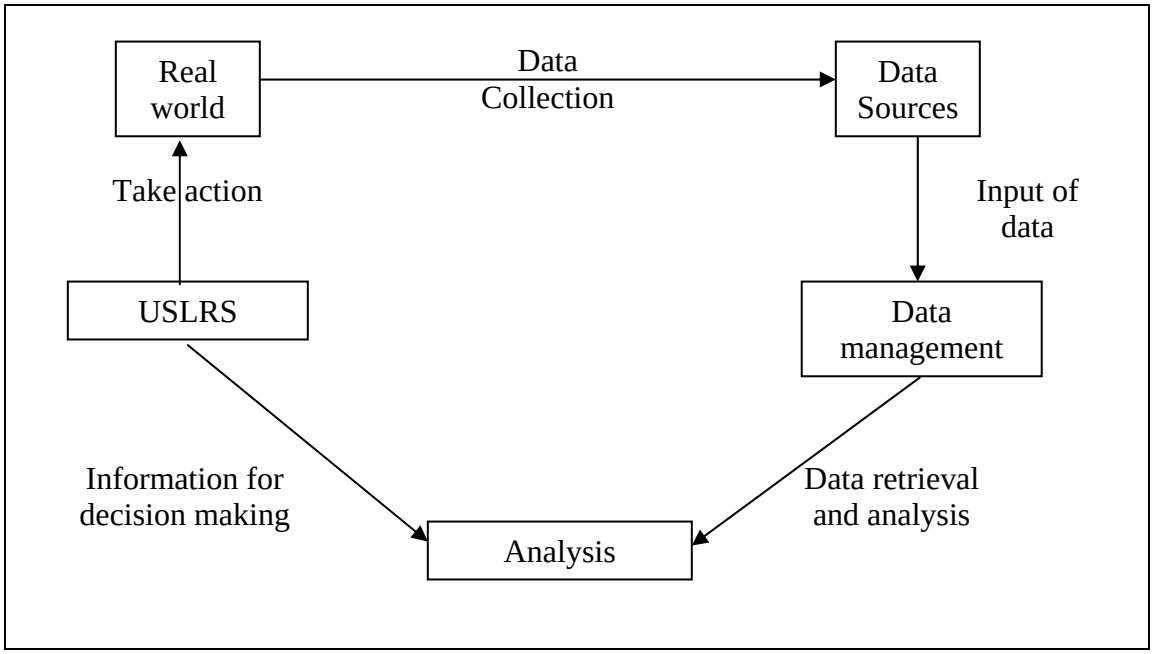
Data → Attribute data Example : tables, texts, images, sounds, films etc.,

### 2.3.4. Function of GIS[28,29,30,31,32]

1. GIS handles input, output of geometric data and attribute data.
2. GIS stores the information in compatible formats usable in GIS operations .
3. GIS structures the information to ensure data access at maximum performance and maximal security for data holdings.
4. GIS edits the information to reflect changes in real world and updating the information.
5. GIS provides a tool for analyzing the stored data.
6. GIS provides the tool for visualizing the information in the database. The varied sources of inputs for GIS are :- .



### 2.3.4 GIS CYCLE[31,32]




Starting with data collection in real world, data is digitised and structured in a computer database. Data from different sources may be combined and analysed together to yield results that are used in decision making. The decision will eventually have an effect on real world, making new data collection from the real world necessary to update the database. Thus the "GIS-cycle" will never end as long as there are dynamic changes in the real world.

### 2.3.6. History of GIS[28,29,30,31,32,33]

A. 35,000 years ago on the walls of caves near "LASCAUX" [complex caves in South West France] contained some of the earliest known art dating back between 13,000 and 15,000 BC. They contain realistic

images of large animals, including aurochs, most of which from fossil evidence have been supposed to have lived in the area at that time.

B. In the modern era two well known personalities who contributed immensely in the discipline of GIS are 1.JOHN SNOW and 2. ROGER TOMLINSON.

### 2.3.6.1. JOHN SNOW [3]

Even before cholera bacillus was identified John Snow was able to identify diarroeal diseases in England to be specifically related to certain agent in a specific source of water body using water supply area maps.

### 2.3.6.2. ROGER TOMLINSON[31]

The first true operational GIS was developed in Ottawa, Ontarian (Canada) by the federal department of energy mines and resources by Roger Tomlinson. It was called CGIS [Canadian GIS] and used to store, analyse, and manipulate data collected for the CLI [Canada Land inventory]. It is a initiative used to determine the land capability for rural Canada by mapping information about soils, agriculture, recreation, wildlife, water, fowl, forestry etc.

For his immense contribution in the development of GIS, Roger Tomlinson is called as “father of GIS” [2,3].

### 2.3.7. Institutions involved in earlier development of GIS[29,30]

The institutions involved in earlier development of GIS are:

A. ESRI

B. Map info

C. CARIS

D. UNIX

### A. ESRI – Environmental systems research institution Inc[28,29,30]

It is a firm based in Redlands, California which produces GIS software.

It is one of the biggest producer of GIS in the word.

### B. Map info[28,29,]

It is a public company formed in 1984 at the high-tech incubator business park on the Peninsula Polytechnic institute campus. It is one of the global leader in GIS software.

### C. CARIS – Computer Aided Resources Information System[28,29]

It is company based in Fredericton, New Brunswick founded in 1979. It initially found its application in terrestrial applications but now the software focuses on specific marketing areas.

**D. UNIX[28,29]**

It is a computer operating system originally developed in 1960s and 1970's by Ken Thompson, Dennis Ritchie and Doughlas McIlroy . It can perform multiple analysis at a faster rate.

### 2.3.8. TECHNIQUES USED IN GIS[30,31,32]

The varied techniques used in GIS software are:

1. Relating information from different sources.
2. Data representation.
3. Data capture and
4. Data manipulation.

#### 2.3.8.1. Relating information from different sources[30,31,32]

The primary requirement for analysis of data consists of knowing the location for the variables. Location may be annotated by x, y and z coordinates of "longitude" as well as "latitude". Longitude denoted by Greek letterλ, describes the location of a place on earth as east or west of a north – south line called the prime meridian. Longitude is given as an angular measurement ranging from 0° at the prime meridian to +180° eastward and -180° westward. Unlike latitude which has the equator as a natural starting position, there is no natural starting position for longitude.

### 2.3.8.2. Representation of data[30,31,32]:

GIS data represents real world objects [eg. road, land use, elevation] with digital data. Real world objects can be divided into 2 abstractions:

a. Discrete object [eg. Hours)
b. Continuous field (eg. Rainfall, amount of elevation)

There are 2 broad methods used to store data in a GIS for both abstractions. They are:

a. Raster form and
b. Vector form.

#### 2.3.8.2.1. Raster Data[30,31,32]

Raster data type consist of rows and columns of cells where in each cell is stored with a single value. The raster data can be discrete [eg. land use] or a continuous value [eg. rain fall] or a null value [if no data is available]. While the raster cell usually stores a single value, it can be extended using "raster bands" to represent:

- RGB colours [Red, Green, Blue]
- Colour maps [a mapping between a thematic code and RGB value]
- Or an extended attribute table with one row for each unique cell value.

The resolution of the raster data is its cell width in ground units. For eg, one cell of a raster image represents one meter on the ground. Usually

cells represent square area of the ground; but other shapes can also be used.

**2.3.8.2.2. Vector Data[30,31,32]**

Vector data type uses geometries such as points, lines [series of point coordinate] or polygons, also called areas [shapes bounded by lines] to represent objects.

Eg. Property boundaries for a housing subdivision represented as polygons and well locations represented as points. Vector features can be made to respect spatial integrity through the application if topology rules like "polygons must not overlap". Vector data can also be used to represent continuously varying phenomena.

"Contour lines" and triangulated irregular networks (TIN)[5] are used to represent elevation or other continuously changing values. TINs record values at point locations, which are connected by lines to form an irregular mesh of triangle. The face of triangles represent the terrain surface**...**

**2.3.8.2.3. GTGN – Gethy Thesaurus of Geographic names[3O,31,32]**

It is a structured vocabulary containing around 1,000,000 names and other information about places. It is used for naming GIS objects.

## 2.3.8.2.4. ADVANTAGES AND DISADVANTAGES OF RASTER VERSUS VECTOR DATA[30,31,32]:-

**A.Storage space:-**

Rater datasets record a value for all points in the area recorded which may require more storage space than representing data in a vector format wherein data can be stored when needed.

**B. Overlay operations:-**

Raster data allows easy implementation of overlay operations which are difficult with vector data.

**C.. Nature of representation :-**

Vector data is displayed as vector graphics used on traditional maps. Raster data will appear as an “image” that may have a blocky appearance for object boundaries.

**D. Means of storing additional non-spatial data:-**

Additional non-spatial dates can also be stored besides the spatial data represented by the coordinates of a vector geometry (or) the position of a raster cell. In vector data the additional data are attributes of the object.

Eg: Aforesaid inventory polygon may also have an identifier value and information about tree species; In raster data the cell value can store attribute information, but it can also be used as an identifier that can relate to records in another table.

| | Vector | Raster |
|---|---|---|
| Characteristics | 1. More compact but more complex data structure<br><br>2. Supports topological relationship efficiently<br><br>3. Better suited to support graphics<br><br>4. Representation of high spatial variability is inefficient<br><br>5. Manipulation and enhancement of digital images cannot be effectively done in vector domain<br><br>6. Overlay operations more difficult to implement.<br><br>7. Better suited to small amount of data<br><br>8. Time sensitive data input and management<br><br>9. Increased degree of geometric accuracy<br><br>10. Increased gradity of graphic representation | 1. Simple but less compact data structure<br><br>2. Topological relationships difficult to represent<br><br>3. High spatial variation is efficiently represented<br><br>4. Favoured for effecient manipulations and enhancement of digital images.<br><br>5. Overlay operations are easily and effectively implemented.<br><br>6. Faster data capture, usually directly from data input devices.<br><br>7. Output may be less visually pleasing at it has a blocky appearance rather than smooth line but can be improved with excessive storage requirements. |

| | Vector | Raster |
|---|---|---|
| Data sources | 1. Manual and automated digitizing from hard copy<br>2. Coordinate geometry (LOGO)<br>3. Third party data (DRG – Digital Raster Graphic)<br>4. GPS/ Surveying<br>5. Photogrammetric surveys | 1. Remote sensing<br>2. Digital orthophotographs<br>3. Scanner |
| Application | 1. Planning and emergency application<br>2. Parcel map based information<br>3. Linear network analysis and modeling<br>4. Infrastructure / Asset managements | 1. Environment and resource management<br>2. Orthophoto mapping<br>3. Terrian modeling<br>4. Land area / Land cover<br>5. Crop production estimation |

### 2.3.8.3. Data capture[30,31,32]:-

Entering information into the GIS system is called “data capture”. There are several methods used to enter data in a GIS format. They are:-

1. Existing data printed on paper or mylar maps can be digitized or scanned to produce digital data.
2. Survey data can be directly entered into a GIS from digital data collection systems on survey instruments. Positions from a global positioning system (GPS), another survey tool can be directly entered into GIS.

3. Remotely sensed data are collected from sensors attached to a plat form. Sensors include cameras, digital scanners and RADAR; platforms include aircrafts and satellites.
4. Photo interpretation of aerial photographs soft copy workstations are used to digitize features directly from stereo pairs of digital photographs. These system allow data to be captured in 2 and 3 dimensions with elevation measured directly from a stereo pairs using principles of "Photogrammetry".
5. Satellites remote sensing spatial data :-

Satellites use different sensor package to passively measure the reflectance from parts of the electromagnetic spectrum or radio waves that were sent out from an active sensor such as RADAR. Remote sensing collects raster data that can be further processed to identify objects and classes of interests such as land cover.

### 2.3.8.4. Editing of GIS data [30,31,32]

1. For vector data it must be made "topologically correct" before it can be used for some advanced analysis.

   Eg. In a road network, lines must connect with nodes at an intersection.
2. Errors like undershoots and overshoots must be removed.
3. For scanned maps, blemishes on the source map may need to be removed from the resulting raster.

For eg., a fleck of dirt might connect 2 lines that should not be connected.

### 2.3.8.5. Data manipulation[30,31,32]

Data restructuring can be performed by a GIS to convert data into different formats eg. A GIS may be used to convert a satellite image map to a vector structure by generating lines around all cells with the same classification, while determining the cell spatial relationships, such as adjacency or inclusion.

Since digital data are collected and stored in various ways, the 2 data sources may not be entirely compatible. So a GIS must be able to convert geographic data from one structure to another.

## 2.3.9. DATA AND FILES REQUIRED FOR A GIS AND THEIR SOURCES[30,31,32]

A GIS contains 4 types of information and computer files:

- Geographic
- Map
- Attributes
- Data – point file

In general, modelling involves the integration of GIS with standard statistical and health science methods.

### 2.3.9. 1. Spatial interaction models[30,31,32]

a. They analyze and predict the movements of people, information and goods from place to place.
b. By accurately modelling these movements, it is possible to identify areas with most at risk for disease transmission and thus target intervention efforts.
c. Spatial diffusion models analyze and predict the spread of phenomenon over space and time.
d. By incorporating a temporal dimension these models can predict how diseases spread spatially and temporally from infected to susceptible host.

### 2.3.9.2. Spatial data analytic techniques[30,31,32]

Some of the graphic and exploratory spatial data analytic techniques are:

1. Point patterns
2. Line patterns
3. Area patterns
4. Surface and contour patterns
5. Statistical monitoring

6. Time series analysis
7. Temporal cluster analysis
8. Spatio – Temporal analytic techniques

#### 2.3.9.2.1. Point patterns[30,31,32]

Also called “dot maps” it attempts to display the distribution of health events as data locations. Eg., identification of the source of cholera spread in London.

#### 2.3.9.2.2. Line patterns[30,31,32]

Vectors (or) lines are graphic resources that aid in the analysis of disease diffusion and patient to health care facilities flow.In their simplest form, lines indicate the presence of flow or contagion between 2 subregions which may or may not be contiguous.Areas with widths proportional to the volume of flow between areas are important tools to evaluate the health care needs of different locations. Eg. International Spread of AIDS.

#### 2.3.9.2.3. Area patterns[30,31,32]

The first stage of data analysis is to describe the available data sets through tables or one dimensional graphs such as histogram. In spatial analysis, the obvious option is to present data on maps, with the “variable of interest” divided into classes or categories and plotted using

colours or hachures within each geographic unit, known as CHLORPLETH MAP[30,31].

The use of stem and leaf plots to classify data before area pattern analysis is more intuitive, easier to use and presents another method of incorporating dynamic graphics into GIS for use.

**2.3.9.2.4. Surface and contour patterns[30,31,32]**

a. Data of epidemiological or public health interest often occur as spatial information during each of several time epochs.
b. The analytical techniques described as “Surface and contour patterns” require the pooling of information in administrative areas with well-defined geographic boundaries, and the presentation of the spatial process with maps constrained to them.

**2.3.9. 2.5. Statistical monitoring[30,31,32]**

A common measure used by epidemiologists to identify increases in case occurrences of diseases, is the ratio of case numbers at a particular time to past case occurrence using the mean or median.

**2.3.9.2.6. Time series analysis[30,31,32]**

a. The common analytical frame work uses time series models to forecast expected numbers of cases, followed by comparison with the actual observation.

b. Detection of changes from historical patterns through forecast error uses the difference between the actual and estimated values at each point in time.
c. In contrast to other monitoring schemes, time series methods use the correlation structure of the data at different time intervals in making estimates.

**2.3.9.2.7. Temporal cluster analysis[30,31,32]**

a. Detection of temporal clusters – understood as a change in the frequency of disease occurrence, is important to stimulate research into the causes and to encourage the development of preventive strategies.
b. Detection of increases in the rate of occurrence of a disease uses either the time intervals of successive events on the number of events on specified time intervals.

**2.3.9.2.8. Spatio – Temporal analytic Technique[30,31,32]**

a. Space – time interaction among health events or between health events and environmental variables is used in epidemiological studies and public health surveillance.
b. This is done based on modeling and simulation because of paucity of available data sets.

# 3.GIS AND ITS APPLICATION IN INFECTIOUS DISEASES

All these while we were discussing the “nuts and bolts” of GIS. In the following sections we describe about infectious disease process and how GIS is relevant in the study of infections disease.

## 3.1.Infection [28]

An infection process is the interaction of a pathogenic microorganism with a macro organism under certain environmental and social conditions.

Microorganisms causing infectious diseases parasites on host and persist due to continuous reproduction of new generations which change their properties in accordance with evolution of the environmental conditions. Living inside its host, the microorganism persist for a definite period of time then move to another host via a corresponding transmission mechanism.

Hence 3 obligatory factors are necessary for the onset and continuous course of an epidemic process:

A – source of pathogenic microorganism

B – mechanism of their transmission

C – susceptibility for the microorganism to infections.

### 3.2. Basic concepts in disease emergence[28]

1. Emergence of infectious disease is a complex process.
2. Infectious diseases are dynamic.
3. Most new infections are not caused by genuinely new pathogens; agents involved in new and reemergent infections cross taxonomic lines that include viruses, bacterias, fungi, protozoa and helminthes.
4. The concept of the microbe as the cause of disease is inadequate and incomplete.
5. Human activities are the most potent factors driving disease emergence. The main factors are:

   a. social b. economic c. political

   d. climatic e. technologies f. environmental factors which shape the disease patterns and influence emergence.
6. Understanding and responding to disease emergence requires a global perspective, conceptually and geographically.
7. In designing prospective studies careful consideration needs to be given to the following factors :
   a. Range of pathogens is potentially unlimited – so microbial indicators needs to be selected.

b. Participant selection: general population, susceptible groups such as children or immuno – compromised that are representative of a sample.
c. Case – definition and ascertainment
d. Exposure assessment
e. Data analysis

### 3.3.How GIS fits in as a research tool?[32]

1. Epidemiologists have traditional used maps when analyzing associations between location, environment and disease.
2. GIS has been used in the surveillance and monitoring of vector borne diseases, water borne diseases, in environmental health, analysis of disease policy and planning health situation in an area, generation and analysis of research hypothesis, identification of high-risk health groups, planning and programming of activities, monitoring and evaluation of intervention.
3. GIS enabled researches to locate high prevalence areas and populations at risk, identify area in needs of researches and make decision on research allocation.
4. Good epidemiology science and good geographic information science go hand in hand.

5. Many development agencies and government institution are explaining health GIS in India.

## 3.4. APPLICATION OF GIS IN VARIOUS INFECTIOUS DISEASES:

### 3.4.1.Tuberculosis

Using GIS technology Patcrick K Moonan, Manuel Bayona, Teressa N Quitagua, Joseph Oppong identified areas of tuberculosis transmission and incidence[33]. They did a cross-sectional analysis of collected data on newly diagnosed culture positive tuberculosis clinical isolates, which was molecularly characterized using IS6110 – based RFLP analysis and spoligotyping methods [to identify patients infected with same strain]. Residental addresses at the time of diagnosis of tuberculosis were geocoded, mapped and generalized estimating equations (GEE) analysis models were used to identify risk factors involved in clustering. This showed distinct areas of geographical distribution of same strain disease. This area can be targeted for screening and treatment programmes for aiming incidence redunct.

### 3.4.2. LEPTOSPIROSIS

The places at risk of leptospirosis and associated environmental conditions in a flood-related outbreak in Rio de Janeiro was studied by Kolsky, Blumenthal, Narimen, Croner et al[34]. .By using spatial analysis cases of leptospirosis were merged with socio-demographic data using GIS. After

plotting risk areas, incidence rates were calculated for each areas. Higher rates were observed for census tracts inside the flood risk areas and in the vicinities of waste accumulation sites. This was in agreement with the expected risk of leptospirosis[35] evidencing the role of environmental and collective factors in the determination of the disease.

### 3.4.3. CRYPTOSPORIDOSIS

Using GIS the relationship between reported cryptosporidiosis and water supply was studied by Sara Hughes, Qutub Syed, Sarah Woodhouse, Iain Lake, Keith Osborn, Rachel M Chalmens, Paul R Hunter.et al[36]. They investigated the epidemiology of sporadic cryptosporidiosis in North West of England and Wales using GIS by plotting on maps of water supply and water quality area boundaries [provided by the two main water utilities]. It proved no correlation of drinking water source with any of five water supplies that serve the areas.

### 3.4.4. SARS [SEVERE ACUTE RESPIRATORY SYNDROME]

To understand the spatial clustering of Severe Acute Respiratory Syndrome (SARS) in Hong Kong, P.C.Lai, C.M. Wong, A.J.Hedley, S.V. Lo, P.Y.Leung, J.Kong, and G.M. Leung from the Department of Community Medicine, University of Hong Kong, , People's Republic of China used GIS as an operational tool[37]. They applied cartographic and geostatistical methods in analyzing the patterns of disease spread during the 2003 SARS outbreak in

Hong Kong using GIS. Elementary mapping of disease occurrences in space and time simultaneously revealed the geographic extent of spread throughout the territory. Statistical surfaces created by the kernel method confirmed that SARS cases were highly clustered and identified distinct disease "hot spots". Contextual analysis of mean and standard deviation of different density classes indicated that the period from day 1(18 February) through day 16 (6 march) was the prodrome of the epidemic, whereas days 86 (15 May) to 106 (4 June) marked the declining phase of the outbreak. Origin – and – destination plots showed the directional bias and radius of spread of superspreading events and also density data with their natural logarithm functions.

### 3.4.5. TOXOPLASMOSIS

Computer generated dot maps were used as an epidemiologic tool to investigate an outbreak of Toxoplasmosis by Steven B. Eng, Denise.H. Werker, Arlene S. King Stephen A. Marion, Alison Bell, Judith L. Renton, G. Stewart Irwin, and William R. Bowie. et al[38] .The group worked from Center for Disease Control and Prevention (CDC). They used computer generated dot maps to examine the spatial distribution of 94 Toxoplasma gondii infections associated with an outbreak in British Columbia, Canada. The incidence among patients served by one water distribution system was 3.52 times that of patients served by other sources. Also acute T. gondii infection among pregnant women was associated with the incriminated distribution system.

GIS has emerged as an important component of many projects in public health and epidemiology[39].GIS is particularly well suited for studying these associations because of its spatial analysis and display capabilities[40]. Medical geography is relatively a new concept in India[40]. The sheer size of our country, varied life styles, climatic zones and environmental conditions makes it all the more important for India to have a health GIS[40].

## 3.5 APPLICATION OF GIS IN AECS, MADURAI

In ARAVIND EYE CARE SYSTEM ,MADURAI the concept of GIS is used in several disciplines like planning of cataract screening camps, study of rubella eye infections, leptospiral eye diseases etc. Under such background GIS is used as an aid in understanding the new disease entity PREUMED TREMATODE INDUCED UVEITIS by using its operational variables.

# 4. AIM AND OBJECTIVE

## 4.1. GOAL

The main purpose of application of Geographic Information System (GIS) in Presumed Trematode Induced Uveitis in AECS – Madurai based population in Tamil Nadu is :

[1] To find the relation of geographical correlates to this new disease entity

[2] To find if the geographical variables behave differently if applied to the control group population. The control group is taken as other paediatric uveitis patients attending uveitis services in the same study period.

[3] To find if any new direction to postulate any hypothesis regarding the gaps in the lifecycle of this new uveitis entity.

## 4.2. INCLUSION CRITERIA

1. All Paediatric patients diagnosed as Presumed Trematode Induced Uveitis in Uveitis services, Aravind Eye Care System, Madurai from June 2004 to December 2005.
2. All Paediatric Uveitis Patients attending Uveitis services, Aravind Eye Care System, Madurai from June 2004 to December 2005.
3. Patients in both groups who were regular for compliance and follow up.

4. Patients in the state of Tamil Nadu alone are included in the GIS analysis alone.

### 4.3. EXCLUSION CRITERIA

1. Patients diagnosed as presumed trematode induced uveitis in age group greater than 16 years.
2. Coincidental uveitis in paediatric age group that are not referred to uveitis clinic and treated in other sub specialities, like following trauma, post intraocular surgery of any cause that responded to conventional treatment modalities.
3. Patients who are not regular for follow ups
4. Patients from neighbouring states like Kerala, Andhra Pradhesh are excluded for GIS analysis alone.

# 5. MATERIALS AND METHODS

## 5.1. METHODOLOGY OF DIAGNOSIS OF PRESUMED TREMATODE INDUCED UVEITIS :

The cases are diagnosed as Presumed Trematode Induced Uveitis based on:

1. History
2. Geographic locality
3. Clinical symptoms and signs.
4. Ruling out the closest differential diagnosis
5. Non-response to medical treatment with topical steroids
6. Good response to surgical treatment by aspiration of the granuloma in the anterior chamber (or) excision of the granuloma. This is used both as a therapeutic and diagnostic modality. The aspirated specimen is sent for histopathological examination.

### 5.1.1. HISTORY

1. All Patients diagnosed as presumed trematode induced uveitis presented to us with compliants of unilateral painful red eye with or without defective vision lasting for weeks to months.

2. They were preceded by history of taking bath in a pond or lake or stream or river during specified duration and period of the day
3. All of these patients are initially treated by local ophthalmologists with topical steroids with no response to treatment
4. History of similar complaints in peer groups were also present in most of the patients
5. Few of the patients who did not have water related activities in water bodies in their residential locality gave history of water related activities in water bodies during their vacation period when they visited their relative's places
6. Data regarding these specific variables obtainted are:
    a) Types of water body
    b) Type of contact with water
        i. Swimming
        ii. Fishing
        iii. Bathing
        iv. Collecting water for household activities
        v. Washing clothes
    c) Specific duration of contact with water bodies
    d) Specific time of day during which there was contact with water bodies

### 5.1.2.GEOGRAPHY

a) The residential address of the patients were evaluated

b) Data regarding distance of their home from water body is obtainted.

c) Using GIS the data is plotted using Arcview 3.0 software after digitization of the map.

d) The data is overlayed with operational variables like:

   i. Drainage area

   ii. Population density

   iii. Soil types

e) For each of the operational variables the data of other paediatric uveitis taken as control group is entered, processed, plotted and analysed using GIS Arcview 3.0 software.

### 5.1.3.CLINICAL SYMPTOMS AND SIGNS

a) The patients are evaluated using uveitis questionnaire for their symptoms and signs starting from history of pain, redness, defective vision, floaters, flashes of light,. history of pain, redness, swelling in joints, fever, skin rashes or lesions, oral or genital ulcer / lesions etc.,

b) Data of best corrected visual acuity of both eyes, intra ocular pressures measured by pulsair method are noted

c) Evaluation of uveitis starting from lids and adnexa, conjunctiva, cornea, anterior chamber, iris, pupil, lens, ocular movements, fundus examination using indirect ophthalmoscopy with indentation were done methodically.

### 5.1.4.RULING OUT THE CLOSEST DIFFERENTIAL DIAGNOSIS:

Relevent investigations like Total count, Differential count, Erythrocyte sedimentation rate, Haemoglobin percentage, Mantoux test were done according to the clinical scenario to rule out the closest differential diagnosis.

### 5.1.5.NON-RESPONSE TO MEDICAL TREATMENT

All patients were initially started / continued on topical steroids eye drops for which there was hardly any clinical response noted.

### 5.1.6.RESPONSE TO SURGICAL TREATMENT:

a) The granuloma was surgically aspirated by a same surgeon.
b) The specimen was sent to histo-pathological examination and analysed.
c) The patients were post operatively advised to continue topical steroids for which they responded dramatically well.
d) The patients are counselled not to continue their water related activities in the presumed source of water bodies.

# 5.2 ANALYSIS USING GIS

**The analysis with GIS Arcview 3.0 software were done as follows:**

### 5.2.1. Verification of data:

The patient's addresses were verified

### 5.2.2. Digitization of map:

The map of Tamil Nadu is digitized according to latitude and longitude using GIS Arcview 3.0 software.

### 5.2.3. Plotting of the data:

The patient's address data are plotted in the GIS map.

### 5.2.4. Overlaying the data:

The district wise map of Tamil Nadu is overlayed with drainage map, soil map and population density map based on 2000 census.

To add more meaning to GIS analysis the control group is also taken into consideration for the operational variables **[**drainage,soil , population density]

# 6.1ANALYSIS OF PRESUMED TREMATODE INDUCED UVEITIS

The analysis of Presumed Trematode Induced Uveitis by the questionnaire yielded data that are grouped as

(A) Significant correlates

(B) Less significant correlates

## 6.1.1. SIGNIFICANT CORRELATES:

### 6.1.1.1.AGE DISTRIBUTION:

| AGE | FREQUENCY | PERCENT |
|---|---|---|
| < = 10 | 12 | 63.16 |
| > 10 | 7 | 36.84 |

Out of the total 19 patients included in the study 12 were within the age group of less than or equal to 10; this computes to 63.16% of the total cases. The remaining 7 patients were aged more than 10 giving a percentage of 36.84%. This has a mean of 9.84 years and standard deviation of 3.48years with a range of 13 years.

### 6.1.1.2. SEX DISTRIBUTION:

| SEX | FREQUENCY | PERCENT |
|---|---|---|
| MALE | 15 | 78.95 |
| FEMALE | 4 | 21.05 |

There was a predominance of male children among the included cases, giving a percentage of 78.95% [calculated from 15 out of 19 patients]. Female children constituted 21.05% [which is obtained from 4 over 19 cases]. This may be due to the fact that that boys are more likely to be exposed to water related activities for increased period of day than girls.

### 6.1.1.3. WATER RELATED ACTIVITIES:

#### 6.1.1.3.1. SWIMMING

| SWIMMING | FREQUENCY | PERCENT |
|---|---|---|
| NO | 5 | 26.32 |
| YES | 14 | 73.68 |

14 out of 19 children gave positive history of water related activity as swimming. This accounts for 73.68% of the water related activity among the cases. In particular 5 out of 19 children gave negative history of swimming accounting about 26.32% of cases.

## 6.1.1.3.2. FISHING

| FISHING | FREQUENCY | PERCENT |
|---|---|---|
| NO | 12 | 63.16 |
| YES | 7 | 36.84 |

7 out of 19 children had fishing as one of the water related activities. This accounts to 36.84%.However 12 children never had fishing as a water related activity. This accounts for 63.16% of negative history of fishing.

### 6.1.1.3. BATHING

| BATHING | FREQUENCY | PERCENT |
|---|---|---|
| NO | 1 | 5.26 |
| YES | 18 | 94.74 |

18 out of 19 children gave positive history of taking bath in the water body accounting for 94.74% of the cases. However 1 child denied taking bath in waterbody which amounts to 5.26% of cases.

## 6.1.1.3.4 COLLECTING WATER

| COLLECTING WATER | FREQUENCY | PERCENT |
|---|---|---|
| NO | 15 | 78.95 |
| YES | 4 | 21.05 |

Only 4 out of 19 cases gave positive history of collecting water as a source of water contact. This accounts to 21.05% of cases.However 15 out 19 [78.95%]patients gave negative history of collecting water from source of water body.

## 6.1.1.3.5.WASHING

| WASHING | FREQUENCY | PERCENT |
|---|---|---|
| NO | 7 | 36.84 |
| YES | 12 | 63.16 |

63.16%[12/19]patients gave positive history of washing clothes in the source of water body. But 7 patients did not have washing as a source of water related contact[36.84%]

In summary the order of the most common water related activities are : bathing >swimming>washing>fishing>collecting water [94.74%]>[73.68%]>[63.16%]>[36.84%]>[21.05%]

This can be explained by the sex preference of the water related activities. That is, female children are more likely to undergo the activity of collecting water for household work, whereas male children are more likely to have water related activity as swimming and bathing. Since Presumed Trematode Induced Uveitis is more common in male population the water related activity of collecting water is the least common type of overall observed water related activity.

## 6.1.1.4. WATER SOURCE

| WATER SOURCE | FREQUENCY | PERCENT |
|---|---|---|
| RIVER | 4 | 21.05 |
| POND/ LAKE | 15 | 78.95 |

Most of the patients gave pond / lake as their source of water related activity.They accounted to 78.95% [15/19]of the total.

However 21.05% of the patients ,that is 4 out of 19 gave their source of water contact as river.

## 6.1.1.5. DISTANCE OF CONTACT FROM HOME

| DISTANCE | FREQUENCY | PERCENT |
|---|---|---|
| LESS THAN1/2 KM | 15 | 78.95 |
| ½ TO 1 KM | 4 | 21.05 |

Most of the patients had their home within half a kilometer from the source of water contact.This group constitutes 78.95% accounting to 15 out of 19 patients. But 4 patients had a distance of greater than ½ to 1 kilometer from the source of contact which constitutes 21.05% of the total.

### 6.1.1.6. TIME OF CONTACT

#### 6.1.1.6.1. TIME OF CONTACT 6 TO 9A.M

| TIME 6TO 9A.M | FREQUENCY | PERCENT |
|---|---|---|
| NO | 11 | 57.89 |
| YES | 8 | 42.11 |

Eleven out of nineteen patients gave negative history of their water related activity between 6 to 9 A.M. They constitute 57.89% of the total. However 8 patients had their water related activity between 6 to 9 A.M. who constituted 42.11% of the total.

## 6.1.1.6.2.TIME OF CONTACT 9 TO 12 NOON

| 9TO 12 NOON | FREQUENCY | PERCENT |
|---|---|---|
| NO | 6 | 31.58 |
| YES | 13 | 68.42 |

Most of the patients had their water related activity between 9 to 12 noon.They account for 68.42% [13/19]of the total.But 6/19 patients denied having their water related activities between 9 to 12 noon.They account for 31.58% of the total.

## 6.1.1.6.3.TIME OF CONTACT 12 TO 3 P.M.

| 12 TO 3 P.M | FREQUENCY | PERCENT |
|---|---|---|
| **NO** | **15** | **78.95** |
| **YES** | **4** | **21.05** |

Most of the patients denied their water related activity occurring between 12 to 3 P.M. They constitute 78.95% [15/19] of the total. However 4 patients had their water related activities between 12 to 3 P.M. They accounted for 21.05% of the total.

## 6.1.1.6.4 TIME OF CONTACT 3 TO 6 P.M

| 3 TO 6 P.M | FREQUENCY | PERCENT |
|---|---|---|
| NO | 7 | 36.84 |
| YES | 12 | 63.16 |

Out of the total 19 patients, 7 patients gave history of not having water related activities between 3 to 6 P.M. They account for 36.84% of the total.But 12 patients had their water related activities between 3 to 6 P.M who constitute 63.16 % of the total.

## 6.1.1.7 DURATION OF WATER CONTACT

| DURATION | FREQUENCY | PERCENT |
|---|---|---|
| LESS THAN ½ HOUR | 10 | 52.63 |
| ½ TO 1 HOUR | 6 | 31.58 |
| 1 TO 2HOUR | 3 | 15.79 |

Most of the children had their water related activities of less than ½ hour. They constitute 52.63%[10/19].But 31.58% and 15.79% of children had their water related activities about 1/2to 1 hour and 1 to 2 hours respectively.

### 6.1.1. 8. HISTORY OF TRAVEL RELATED WATER CONTACT

| TRAVEL | FREQUENCY | PERCENT |
|---|---|---|
| YES | 8 | 42.11 |
| NO | 11 | 57.89 |

Eight out of nineteen patients gave positive history of travel to their native places and exposture to water related activities there. They accounted to 42.11% of the total. But 11/19 that is 57.89 % of the patients denied such a history.

## 6.1.1.9. BEST CORRECTED VISUAL ACUITY

### 6.1.1.9.1. Presurgical intervention Best Corrected Visual Acuity

| BCVA | FREQUENCY | PERCENT |
|---|---|---|
| 6/12 | 1 | 5.26 |
| 6/9 | 1 | 5.26 |
| 6/6 | 17 | 89.47 |

Most of the patients had their best corrected visual acuity of 6/6.This group constituted 89.47%[17/19].However 1 patient had a visual acuity of 6/9 and 6/12 each [5.26%]

### 6.1.1.9.2. POST SURGICAL INTERVENTION BEST CORRECTED VISUAL ACUITY

| BCVA | Frequency | Percent |
|---|---|---|
| 6/9 | 1 | 5.26 |
| 6/6 | 18 | 94.74 |

Post surgical intervention 18 of 19 patients had best corrected visual acuity of 6/6. This constitute 94.74 percent. But 1 patient had a best corrected visual acuity of 6/9 which constituted 5.26 percent. The solitary patient with visual acuity of 6/12 improved to 6/9 and the other solitary patient with visual acuity of 6/9 improved to 6/6 following surgical intervention.

This is well represented in the bubble scatter plot. In this plot the diagonal denotes no change in Best corrected visual acuity following surgical intervention. Above the diagonal improvement in BCVA is represented. Below the diagonal decrease in BCVA is represented. Fortunately no case had a drop in visual acuity in this small study group of 19 patients.

## 6.1.1.10. INTRAOCULAR PRESSURE OF THE INVOLVED EYE

| IOP | FREQUENCY | PERCENT |
|---|---|---|
| <21 mm Hg | 18 | 94.74 |
| > = 21mm Hg | 1 | 5.26 |

Only 1/19 patient had a intra ocular pressure of greater than or equal to 21 mm Hg[5.26%]. The remaining 18 patients had intra ocular pressure less than 21 mmHg.This has a mean of 15.36mm Hg and standard deviation of 3.58%.The range of intra oclar pressue is 15 mm Hg. [ 11 reduced from 26].

## 6.1.1.11. SIZE OF GRANULOMA

| GRANULOMA SIZE | FREQUENCY | PERCENT |
|---|---|---|
| <1mm | 1 | 5.26 |
| 1-2 mm | 17 | 89.47 |
| >2mm | 1 | 5.26 |

89.47% [17/19] had a granuloma of size 1to 2 mm. But 1patient each had a size of <1 mm and >2 mm respectively accounting for 5.26% respectively of the total.

## 6.1.2. LESS SIGNIFICANT CORRELATES

**6.1.2.1.** No significant statistical difference in the side of the involved eyes is observed.

**6.1.2.2.** Most children had water related activities in their per groups However few of them came to hospital for examination.

**6.1.2.3.** No similar complaints in the past was noted.

**6.1.2.4.** None of the children had history of passage of worms in stool, deworming, passage of blood in urine.

**6.1.2.5.** Only very few children whose brothers, sisters of similar age group had similar complaints

**6.1.2.6.** Other than pain, redness, photophobia, defective vision none of the children gave positive history of other uveitic complaints mentioned in the questionnaire

**6.1.2.7.** Most of then had an acute onset and course of the disease.

**6.1.2.8.** Except conjunctival congestion + Anterior chamber granuloma, reaction (or) conjunctival congestion + conjunctival granuloma rest of the anterior and posterior segments of the eyes were within normal limits in the study group.

# 6.2 ANALYSIS USING GIS

### 6.2.1.1 VARIATE OF DRAINAGE:

1. Using GIS Arcview 3.0 software the state of Tamil Nadu is divided into following drainage basins :

i. Chennai basin

ii. Palaru basin

iii. Pennaiyar basin

iv. Vellaru basin

v. Cauvery basin

vi. Vaigai basin

vii. Vaipparu basin

viii. Thambraparani basin

ix. Nambiar basin.

2. Each basin is again subdivided into sub-basins with the major dams / anaicuts shown as in the GIS map.

### 6.2.1.1. Variate of drainage in Presumed Trematode Induced Uveitis

The Presumed Trematode Induced Uveitis cases are located in:

i. Cauvery basin

ii. Pennaiyar basin

iii. Vaigai basin

iv. Vaippar basin

2. The absence of cases in other basins may be postulated due to:

[a] absence of presumed trematode in such basins

[b] absence of intermediate host / hosts of the presumed trematode

[c] presence of unknown inhibitional factor / factors in such basins

[d] relative distance of the basins from the tertiary eye care centre, Aravind Eye Care System, Madurai.

**6.2.1.2. Variate of drainage in other paediatric uveitis group**

1. On comparison with GIS – drainage map of other paediatric uveitis the cases are distributed in all the river basins mentioned above except Palaru and Nambiar basin.

2. The reason for the absence of cases from these two basins could be due to relative distance of such basins from Madurai.

3. An interesting pointer in both the analysis is that there is a relative clustering of cases in and around Madurai which again can be attributed as a distance bias.

### 6.2.2. VARIATE OF SOIL:

[1] Using GIS map the state of Tamil Nadu is divided into areas of

i. Reddish Brown soil

ii. Red sandy soil

iii. Black soil

iv. Immature soil

v. Mature soil

vi. Recent soil

vii. Recent sandy soil

viii. Rock out crops

ix. Soils with dcomposed organic matter.

#### 6.2.2.1. Variate of soil in Presumed Trematode Induced Uveitis

[1] The presumed trematode induced uveitis cases occur in:

(a) Reddish Brown soil

(b) Red sandy soil

(c) Black soil

(d) Immature soil

[2] A careful study of GIS map may highlight the fact most cases are plotted along transitional areas of one soil zone to other soil zone.

E.g

i. Black ⟶ Red sandy soil

ii. Red sandy ⟶ Black soil

iii. Reddish Brown ⟶ Red sandy soil

iv. Reddish Brown ⟶ Black soil

v. Immature ⟶ Black soil

[3] However few cases occurred entirely within the zones of

i. Reddish Brown soil,

ii. Red sandy soil

[4] This may be explained as

(a) Presence of presumed trematode, intermediate host / hosts in the above two soil zones

(b) The transitional zones aid in the agent – host – environment interaction especially with relevance to intermediate - host / hosts

(c) The self – sustainability of reddish brown soil, red sandy soil may suggest an investigator to look at what factor / factors lies in them that promote the life cycle of presumed trematode, intermediate- host / hosts

(d) The absence of presumed trematode in mature soil, recent soils, recent sandy soils, rock outcrops, soils with decomposed organic matters may be due to

[i] Nature of the soils per se which does not allow either agent, intermediate host / intermediade hosts, hosts to resonate in unison.

[ii] Absence of water bodies in such soil per se, which thereby rules out the contact of either agent, host, intermediate host / intermediate hosts to occur

[iii] Presence of inhibitional factor / factors in such soils that impedes the life cycle of trematode or intermediate host / hosts

#### 6.2.2.2. Variate of soil in other paediatric uveitis group

[1] On comparing GIS soil maps of other paediatric uveitis, no definite pattern of soil preference could be definitely attributed.

[2] But there is clustering of cases around Madurai. This could be due to the distance bias. That is patients closer to Madurai are more likely to visit AECS – Madurai than patients located far off from Madurai.

### 6.2.3. VARIATE OF POPULATION DENSITY IN GIS MAP:

1. Using GIS map the state of Tamil Nadu is divided into

[a] Very low zone --- Population density of < 350 / $km^2$

[b] Low zone --- Population density of < 350 – 600 / $km^2$

[c] Medium zone --- Population density of < 600 – 850 / $km^2$

[d] High zone --- Population density of < 850 – 1100/$km^2$

[e] Very high zone--- Population density of > 1100 / $km^2$

#### 6.2.3.1. Variate of population density in Presumed Trematode Induced Uveitis

1. In the GIS analysis the cases of presumed trematode induced uveitis occurred in

[a] Very low zone --- Population density of < 350 / $km^2$ ⟶ 12 cases

[b] Low zone --- Population density of < 350 – 600 / $km^2$ ⟶4 cases

2. This may be due to the fact that people in areas of low population density are more likely to have access to water bodies

3. Also people in areas of high population density do take bath in their home bath rooms there by ruling out contact of presumed trematode, its intermediate host / hosts

4. But the factor that prevents presumed trematode induced uveitis from occurring in medium zones of population density remains open for question.

### 6.2.3.2. Variate of population density in other paediatric uveitis

1. The GIS map of population density in other paediatric uveitis shows that cases occured in almost all the 5 zones mentioned above.

2. But there is clustering of cases around Madurai.

3. This may be explained by the fact that cases pour into Aravind Eye Care System –Madurai from neighbouring areas than from far off areas who naturally are more likely to visit other eye hospitals located elsewheree

### 6.2.4. VARIATE OF DISTRICT IN GIS MAP

#### 6.2.4.1. Variate of District in Presumed Trematode Induced Uveitis

[a]The Presumed trematode induced uveitis cases occur in :

1. Pudukkottai district [8]
2. Sivaganga district [1]
3. Thiruvarur district [1]
4. Nagapattinam district [2]
5. Perambalur district[1]
6. Dharmapuri district [1]
7. Virudhunagar district [1]
8. Ramanadhapuram district [1].

The total comes to 16 as 3 patients from Kerala are eliminated for GIS analysis due to technical reasons in formatting GIS map.

[b]The absence of cases in other districts may be due to the fact that patients may prefer to go to near-by eye hospitals and this clearly shows the limitations of this hospital based study.

#### 6.2.4.2. Variate of District in other paediatric uveitis

[a] The cases of other paediatric uveitis occur diffusely in almost all the districts.

[b] But there was absence of cases in northern districts and clustering of cases around Madurai.

[c] This could again be attributed to distance bias as discussed previously.

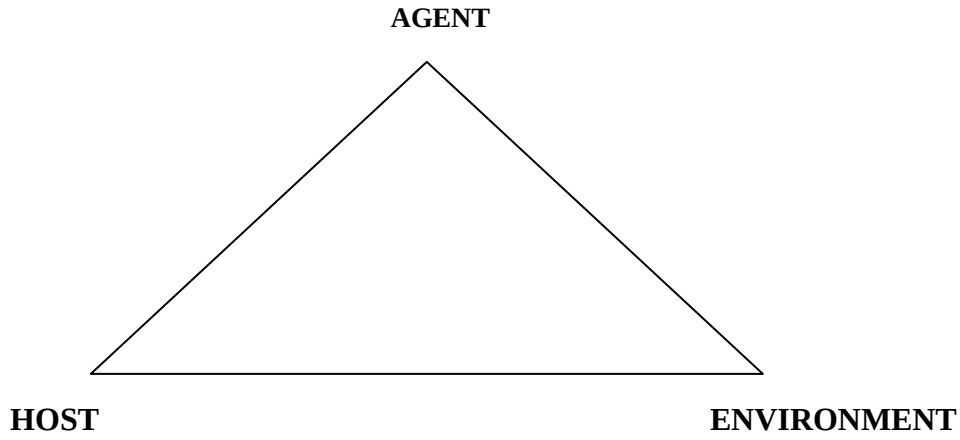
[d] The final conclusion map combining both the groups in the same GIS map shows the following features:

i) In districts when both the groups (with both sexes included) are present , Presumed Trematode Induced Uveitis is the most common paediatric uveitis

ii) As the distance from AECS – Madurai increases i.e., towards northern is southern most districts the predominance of Presumed Trematode Induced Uveitis decreases dramatically.

# 7. DISCUSSION

[1]Epidemiological triad consists of agent, host and environment.




The analyzer has taken one attribute of each of the epidemiological triad to postulate a hypothesis;

Agent ⟶ Soil map

Host ⟶ Population density map

Environment ⟶ Drainage map.

***Hence this analysis is only an apex of the tip of an iceberg and not even an a tip of it.*** Further analysis may be needed regarding influence of other variables like ;

- Temperature[maximum versus minimum],
- Humidity,
- Length of the day
- Period of the year etc.,

Analysis of these or related variatets may yield a positive or neutral or negative attributes on the disease entity.

[2]All the cases showed water related activities in fresh water and not in sea water. This fact may be alluring that it may be related to pH of water, osmotic effect, presence of an inhibitional factor or an organism in the sea habitat .The presence of such an inhibitional factor or an organism in the sea soil [like a specific intermediate host] may be used in biological prevention of this presumed trematode induced uveitis. This is similar to usage of mosquito larvae– eating – pisces [fishes] in controlling mosquito related diseases. Again this environmental health approach is much more economical and potential risk - versus - benefit needs to be kept in mind.

[3] The child that had the lowest visual acuity had the highest intra ocular pressure in this group .This boy had increased duration of exposture to water related activity wih larger sized granuloma and happens to be in early teens. These were in expected lines but not statistically significant to postulate a hypothesis.

[4] The analysis with GIS, yielded one of the salient finding of cases clustering around transitional zones of soil. This is a new information that would not have been possible without GIS application.

[5]This study could point in areas of further research in completely understanding gaps in pathogenesis of “PRESUMED TREMATODE INDUCED UVEITIS”.

# 8. CONCLUSION

It has been traditionally said, “Knowing history maketh a man wiser”. But time has come wherein we should rephrase it as “Knowing geography with geographic information system will definitely maketh a man wisest among them” since GIS has such a tremendous influence on operational research.

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# PROFORMA FOR PRESUMED TREMATODE INDUCED UVEITIS

1. Serial No :
2. Name :
3. Age :
4. Sex :
5. M.R.No :
6. Residence :

7. Presenting complaints

8. H/O Water related activities
    a. Contact with river water :
    b. Contact with lake water :
    c. Contact with stream water :

    1 = YES; 2=NO

9. Type of contact with water :
    a. Swimming :
    b. Fishing :
    c. Bathing :

d. Collecting water for household works :

e. Washing clothes :

10. Duration of contact with water :

a. Less than ½ hour :

b. ½ to 1 hour :

c. 1 to 2 hours :

d. 2 to 3 hours :

e. 3 to 4 hours :

f. 4 to 5 hours :

g. 5 to 6 hours :

h. Greater than 6 hours:

11. Time of contact with water :

a. 6 to 9 A.M., :

b. 9 to 12 noon., :

c. 12 to 3 P.M :

d. 3 to 6 P.M :

12. H/o travel to places containing pond/lake :

13. H/O water related activities in peer groups :

14. H/o similar complaints in the peer groups

15. H/o similar complaints in the past

16. Distance of the house from pond/lake:

a. Less than ½ km :

b. ½ to 1 km :

c. Greater than 1 km :

17. H/o passage of worms in stool :

18. H/o deworming

19. H/o of passage of blood in urine :

20. H/o of similar complaints in family members :

21. PAIN Y/N DURATION RE/LE

22. REDNESS Y/N DURATION RE/LE

23. PHOTOPHOBIA Y/N DURATION RE/LE

24. FLOATERS Y/N DURATION RE/LE

25. DEFECTIVE VISION Y/N DURATION RE/LE

26. JOINT PAIN Y/N DURATION RE/LE

27. SWELLING / REDNESS OF JOINTS Y/N DURATION RE/LE

28. FEVER Y/N DURATION RE/LE

29. SKIN RASHES Y/N DURATION RE/LE

30. GENITAL LESIONS Y/N DURATION RE/LE

31. ORAL LESIONS Y/N DURATION RE/LE

32. TREATMENT H/O :

33. ONSET --------- [ACUTE =1; INSIDIOUS =2; CHRONIC =3]

34. COURSE -------[ACUTE =1; INSIDIOUS =2; CHRONIC =3]

35. V/A UNCORRECTED RE / LE  CORRECTED RE / LE

36. Intra ocular pressure RE = ----------mm Hg LE = --------- mm Hg

37. CONJUNCTIVA

    a. Congestion ---------- RE ---------- LE

    b. Nodule ---------- RE ---------- LE

38. CORNEA

    a. Epithelium ---------- RE ---------- LE

    b. Stroma ---------- RE ---------- LE

    c. Endothelium ----------RE ---------- LE

    d. Sensation ----------RE ---------- LE

    e. K.P.S ----------RE ---------- LE

39. A.C.

    a. Cells ---------- RE ---------- LE

    b. Flare ---------- RE ---------- LE

40. HYPOPYON ----------RE ---------- LE

a. Colour ----------RE ---------- LE

1=white; 2=yellow ; 3= blood tinged

b. Nature ----------RE ---------- LE

1 = fluid; 2 = thick

41. IRIS

a. Colour and pattern----------RE ---------- LE

b. P.S. ----------RE ---------- LE

c. P.A.S ----------RE ---------- LE

d. Nodules ----------RE ---------- LE

1 = Koeppe's; 2 = Bassaca's

e. Granulomas ----------RE ---------- LE

1= Less than 1 c.m; 2= 1 to 2 c.m; 3 = greater than 2 c.m;

f. Neovascularisation ---------RE ---------- LE

42. PUPIL ----------RE ---------- LE

43. LENS ----------RE ---------- LE

44. # AVF ----------RE ---------- LE

45. FUNDUS

a. Media ----------RE ---------- LE

1 = clear; 2 = hazy;

b. Disc

i. SIZE ----------RE ---------- LE

1 = normal ; 2 = abnormal

ii. SHAPE ----------RE ---------- LE

1 = normal ; 2 = abnormal

iii. ##CDR ----------RE ---------- LE

iv NRR ---------- RE ---------- LE

1 = pink ; 2 = pale;

v. FR ----------RE ---------- LE

1 = present; 2 = absent;

vi. Peripheries ----------RE ---------- LE

1 = normal ; 2 = tessellated

*vii Retinitis ----------RE ---------- LE

*viii Choroiditis ----------RE ---------- LE

*ix Vaculitis ----------RE ---------- LE

*x Neovascularisation ----------RE ---------- LE

*xi Exudative R.D., ----------RE ---------- LE

*xii O.N.H. Edema ----------RE ---------- LE

*xiii C.M.E ----------RE ---------- LE

*xiv Vitreous opacities ----------RE ---------- LE

*xv Snowballs ----------RE ---------- LE

*xvi Snowbanks ----------RE ---------- LE

*xvii Dalen Fuch’s nodules --------RE ---------- LE

*1 = Present; 2 = Absent

# Gradings

46. LABORATORY TESTS

** a. T.C. ----------

** b. D.C ----------

** c. V.D.R.L ----------

** d. Toxo I.g M/A ----------

** e. ACE ----------

** f. ANA ----------

**g. CXR ----------

** h. Mantoux ----------

** i. Others ----------

** Actual Values

47. TREATMENT GIVEN

48. SURGICAL TREATMENT

a. A.C.TAP ----------RE ---------- LE

1= DONE ; 2 = NOT DONE

b. Iris tissue biopsy

1= DONE ; 2 = NOT DONE

c. Nodule Biopsy ----------RE ---------- LE

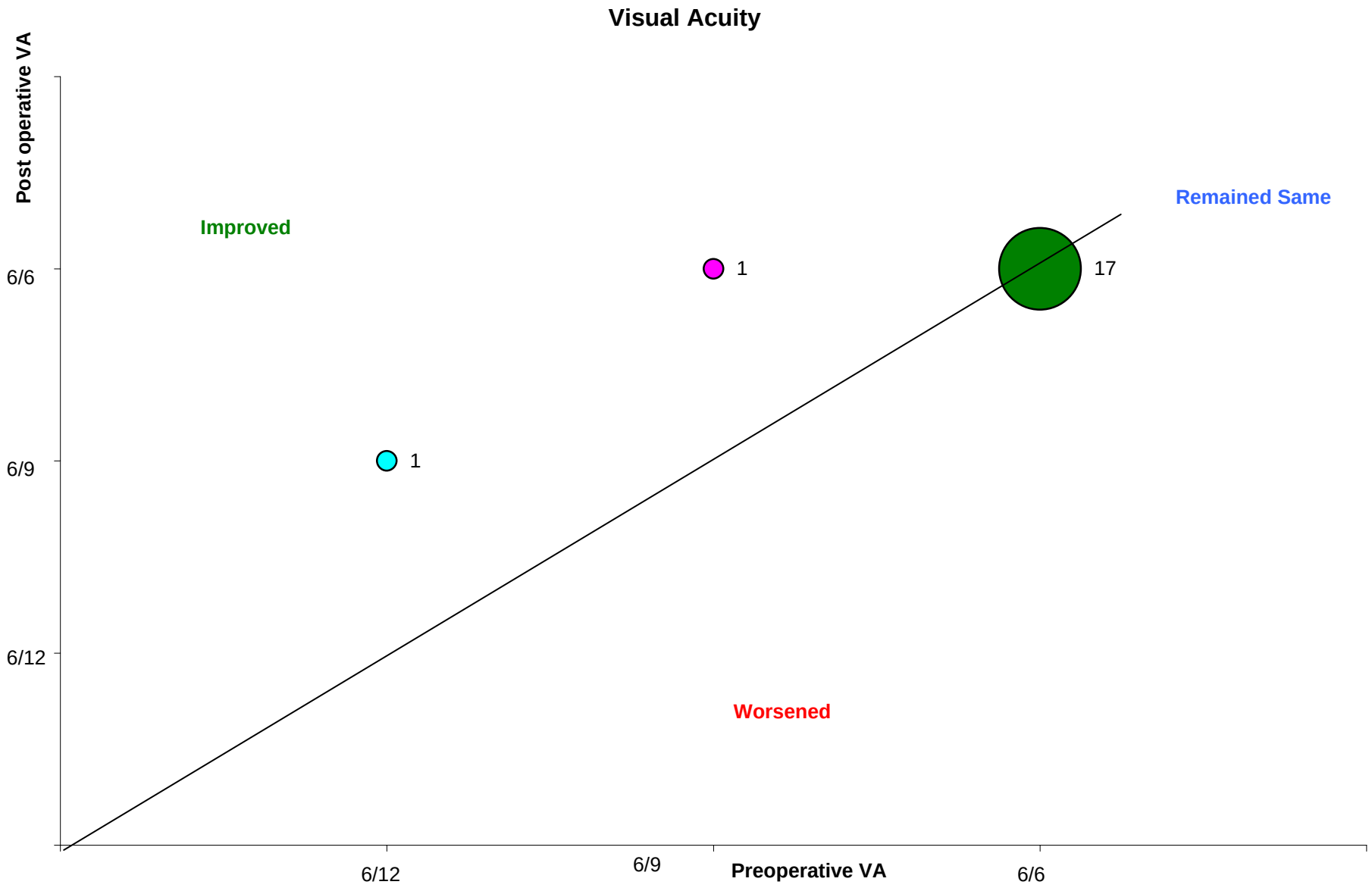
1= DONE ; 2 = NOT DONE

IF ANSWER TO a/ b/ c IS 1 THEN THE RESULT IS

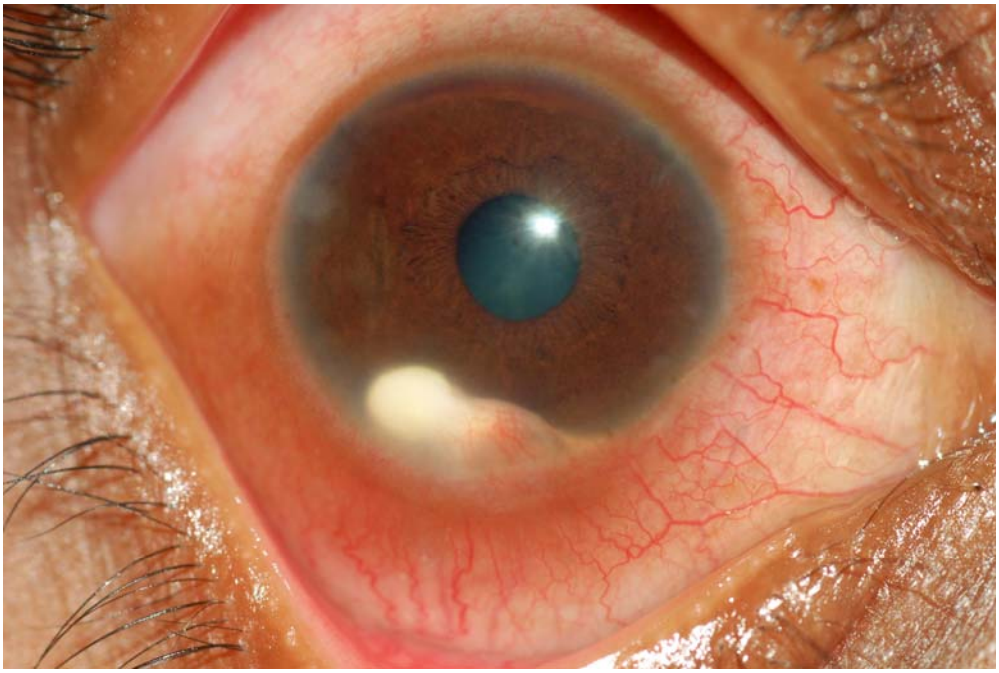
----------RE ---------- LE

1= POSITIVE ; 2 = NEGATIVE;

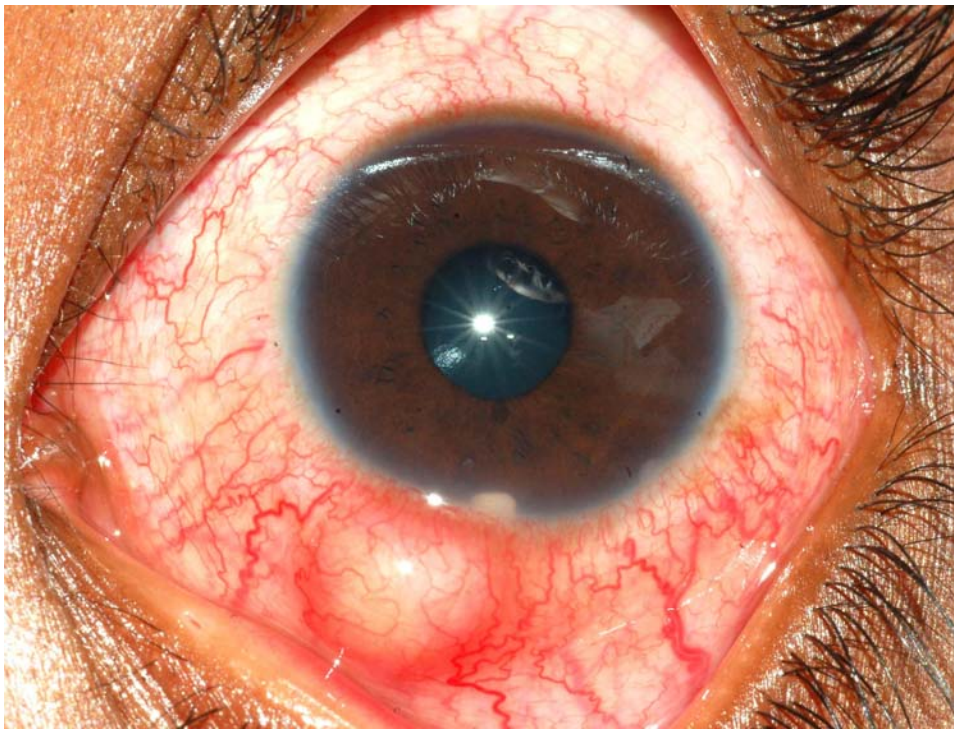
49. FOLOW UP


Visual Acuity
Post operative VA
Improved
Remained Same
6/6
6/9
6/12
1
1
17
Worsened
6/12
6/9
Preoperative VA
6/6

## ANTERIOR CHAMBER GRANULOMA



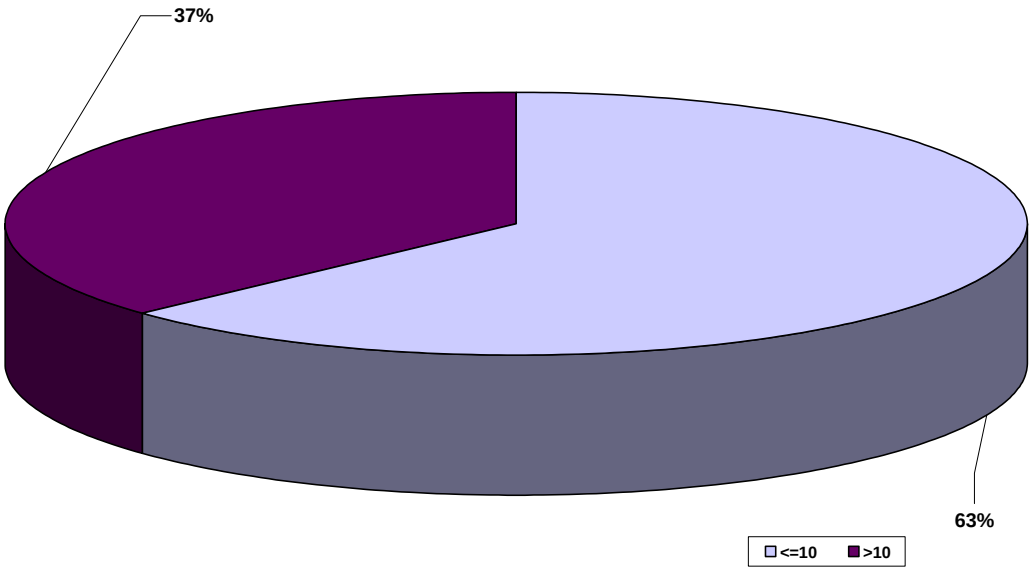
## CONJUNCTIVAL GRANULOMA



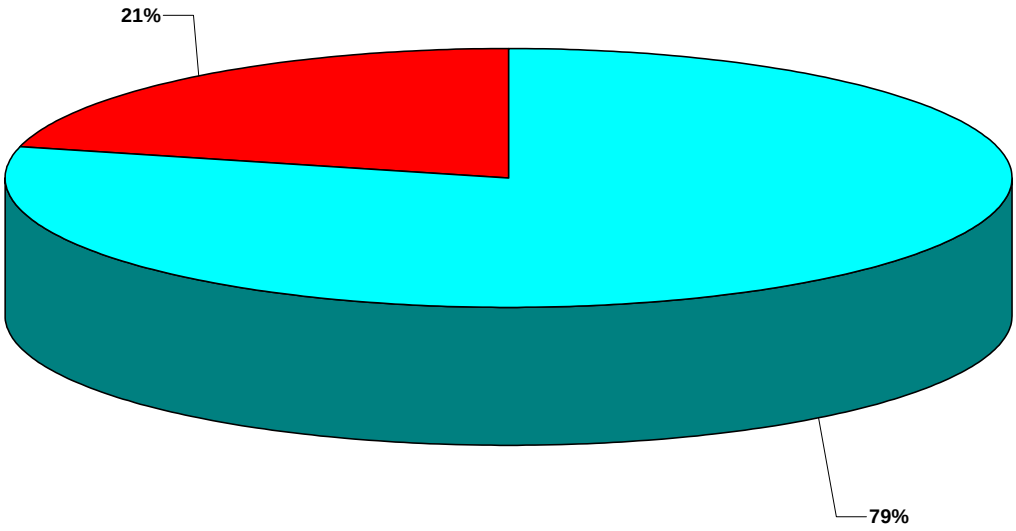
## APPLICATION OF ARCVIEW 3.0 SOFTWARE

## COLLECTION OF SNAILS

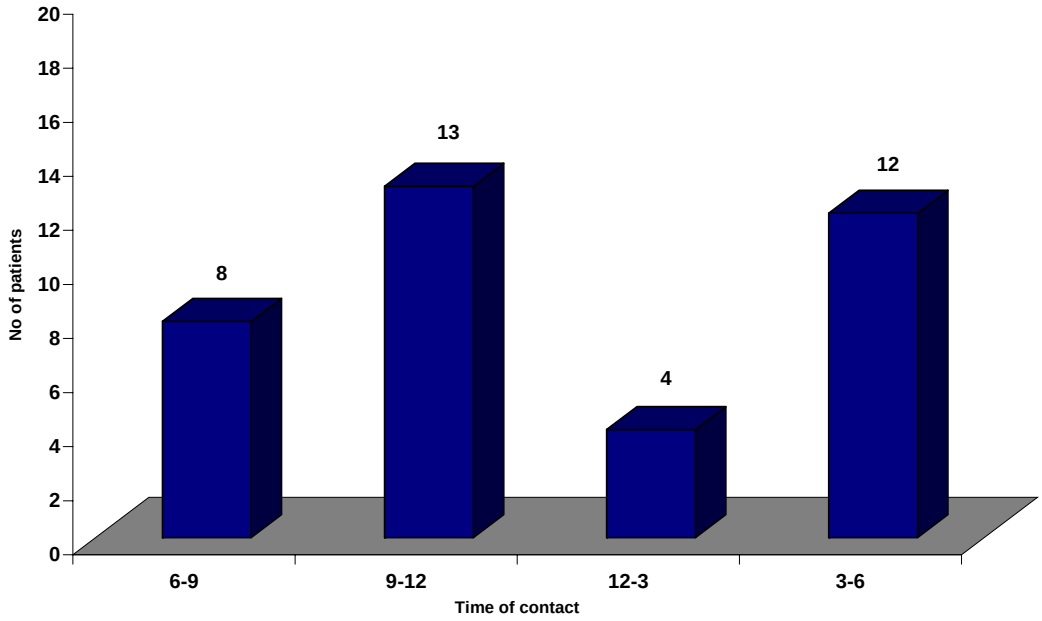
**AGE DISTRIBUTION**



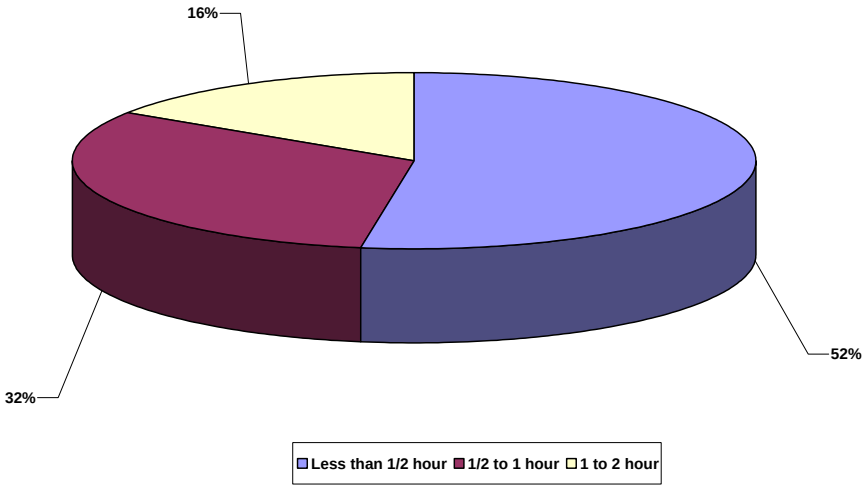

**SEX DISTRIBUTION**



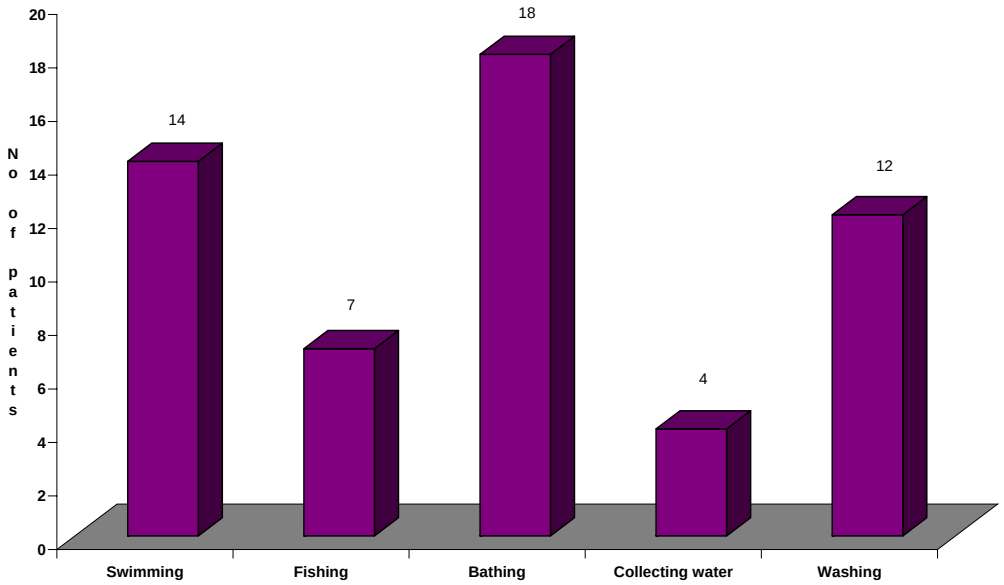
## Time of water related contact



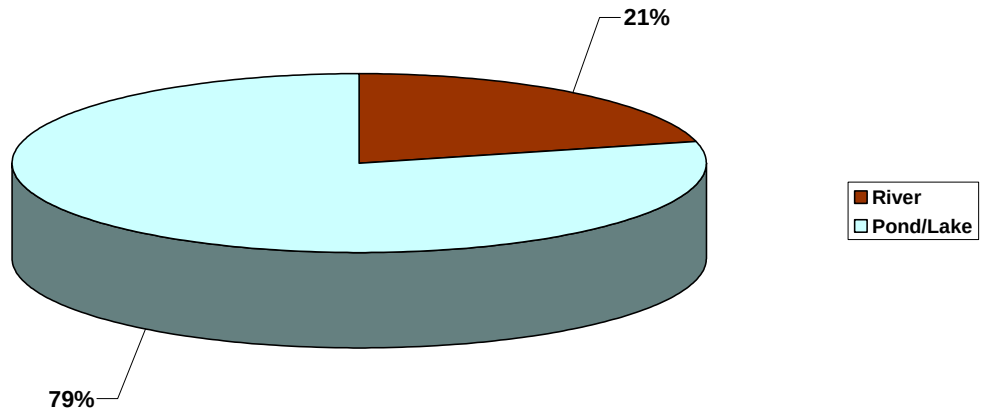

## Duration of water contact



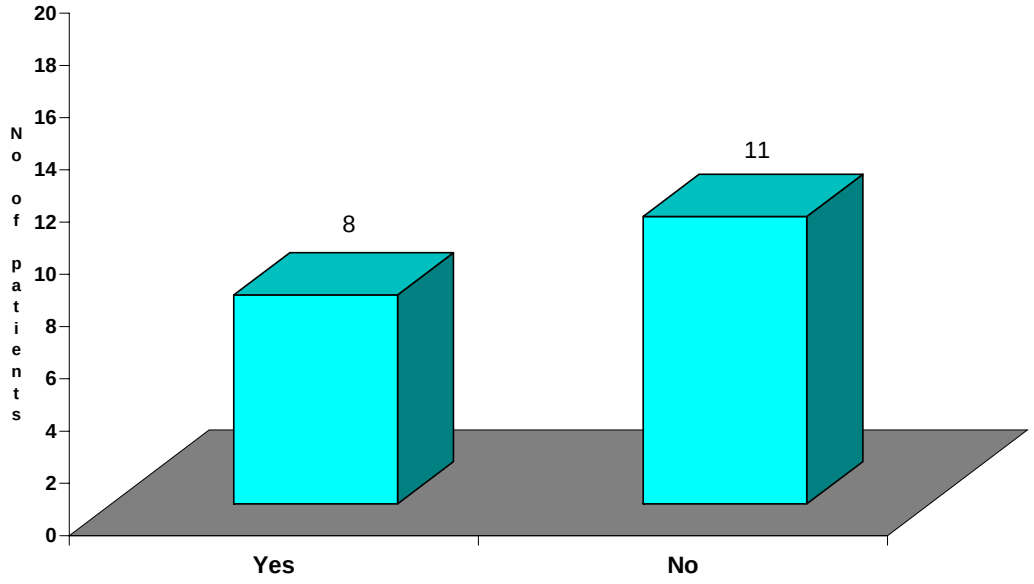
## Water related Activities

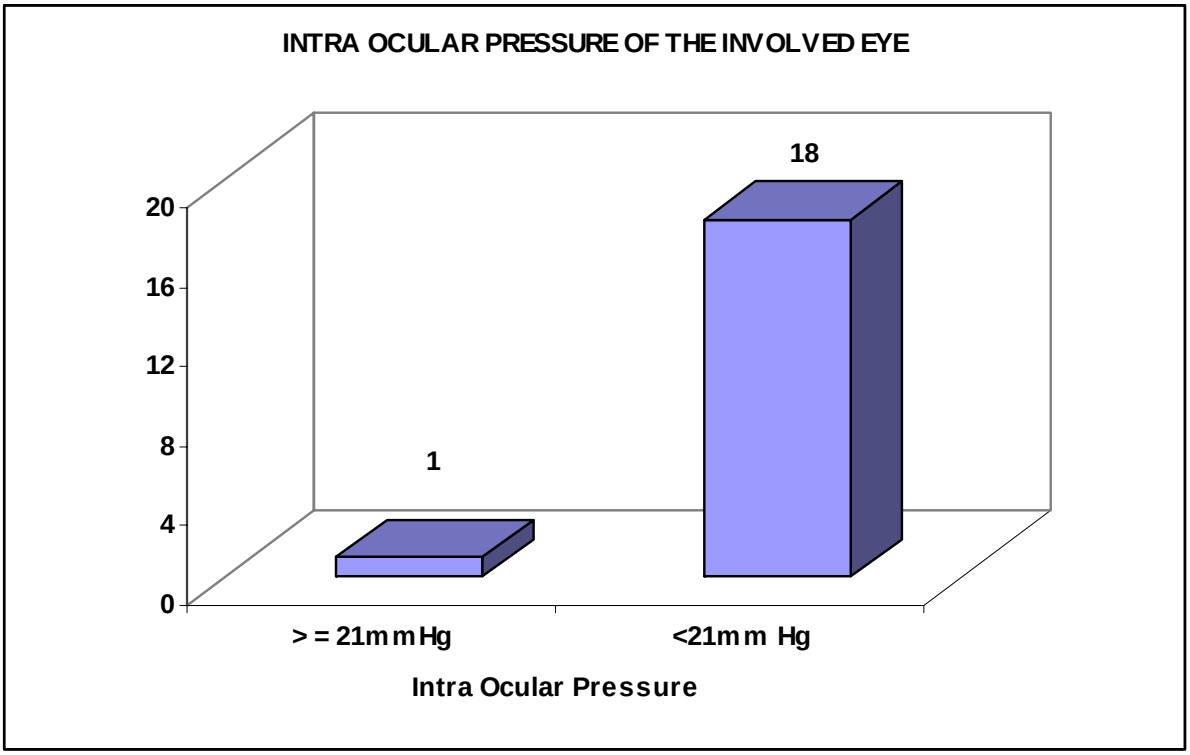



## WATER SOURCE

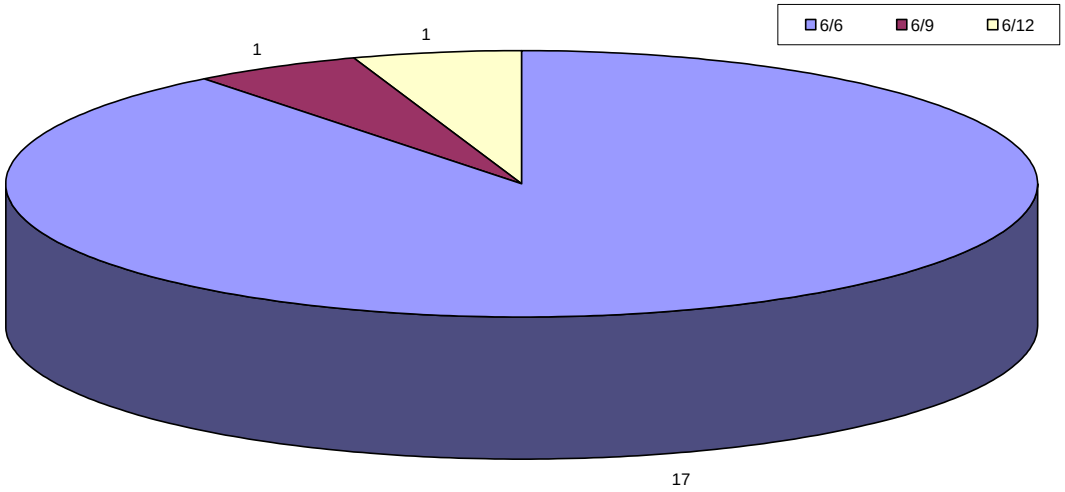


**History of traval related water activities**

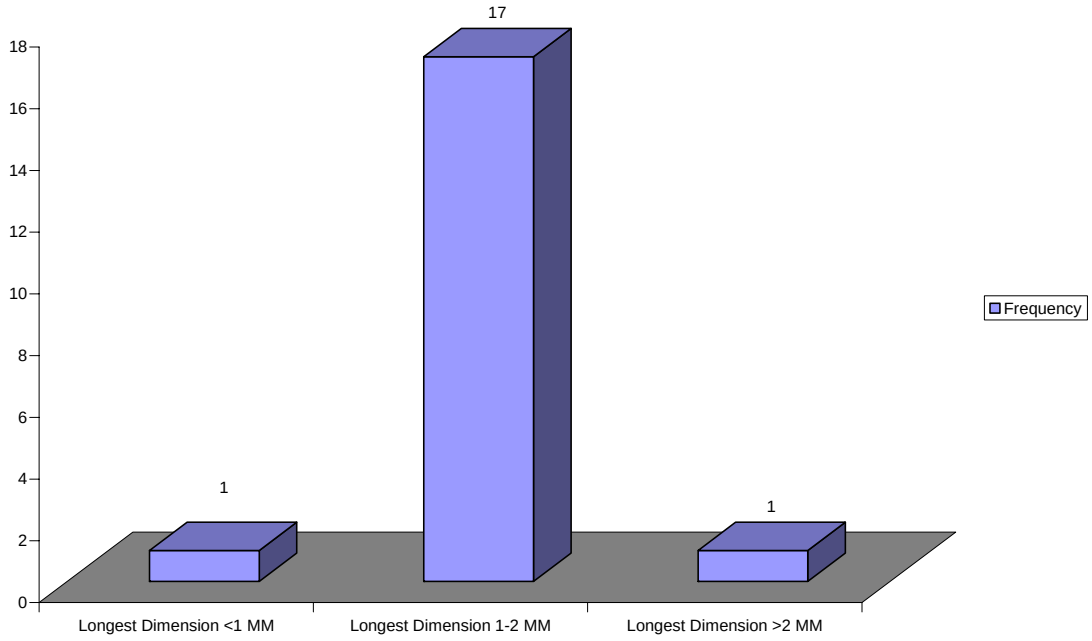


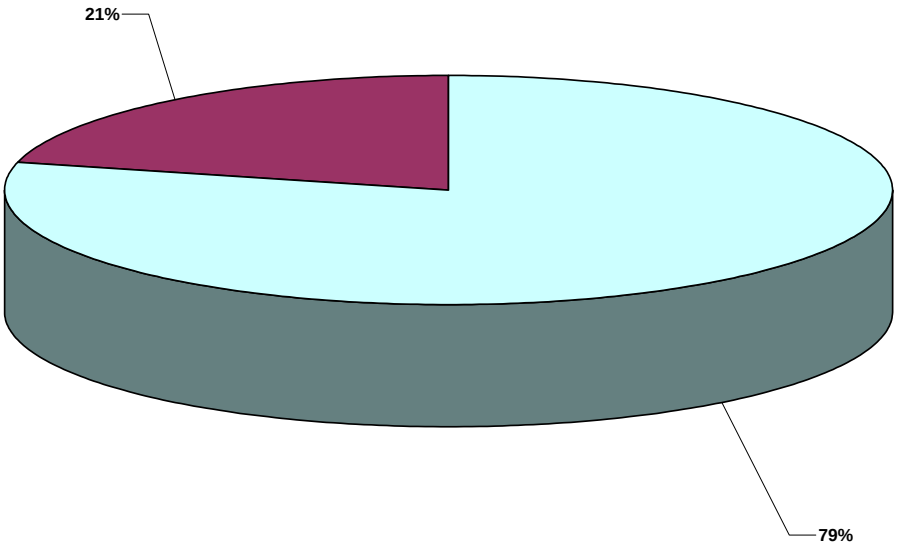
**BCVA in the involved eye**




**Size of granuloma**



**Distance of contact home**



| Sl.No. | Name of the patient | MR No | Age | Gender | Hamlet/Village/town/city | | District | Diagnosis |
|---|---|---|---|---|---|---|---|---|
| 1 | THIRUMURUGAN.K | 1891620 | 11 | MALE | VENTHONI P.O/PARAMAKUDI | PARAMAKUDI | RAMANATHAPURAM | TB |
| 2 | GOWTHAM.P | 1892523 | 7 | MALE | DINDIGUL | DINDIGUL | DINDIGUL | VIRAL RETINITIS |
| 3 | VASANTH.K | 1895281 | 14 | MALE | SHOLAVANDAN | MADURAI | MADURAI | IDIOPATHIC |
| 4 | ANANDKUMAR.A | 1896849 | 15 | MALE | DEVIKURICHI | ATTUR | SALEM | IDIOPATHIC |
| 5 | PALANIKUMAR.M | 1875791 | 6 | MALE | JAKKAMPATTI | ANDIPATTI | THENI | TB CHOROIDAL GRANULOMA |
| 6 | MOHAMMED AGRAMSHA.N | 1877053 | 4 | MALE | MADHUKKUR | PATTUKOTTAI | TANJORE | PARS PLANITIS |
| 7 | SHALINI.K | 1843158 | 15 | FEMALE | VANGAL MARIGOUNDERPALAYAM/KUPPUCHIPALAYAM | KARUR | KARUR | VKH |
| 8 | RAMIEENA.M | 1886458 | 13 | FEMALE | PURANGU | MALAPPURAM | MALAPPURAM | RE CHOROIDAL GRANULOMA-SARCOID/TB |
| 9 | KIDIYON.J | 1870965 | 15 | MALE | NOCHIODAIPATTY | KOOVANUTHUR | DINDIGUL | ACUTE RETINAL VASCULITIS |
| 10 | ABDULLAH.M | 1817676 | 15 | MALE | NORTH ULLANAM | KOZHIKODE | KOZHIKODE | TB GRANULOMATOUS UVEITIS |
| 11 | SUNDARAPANDIAN.G | 1805149 | 13 | MALE | THIRUMANGALAM | THIRUMANGALAM | MADURAI | TB VASCULITIS |
| 12 | ALAGURANI.S | 1590582 | 12 | FEMALE | KUTTIMEKKARPATTI | VADIPATTI | MADURAI | JRA |
| 13 | AISWARYA.G | 1649283 | 14 | FEMALE | Y.OTHAKADAI | MADURAI | MADURAI | PARS PLANITIS |
| 14 | SURUTHI.R | 1907762 | 15 | FEMALE | KILUKKUPARAMBILLE | PATHANAMTHITTA | PATHANAMTHITTA[KERALA] | BE-VKH |
| 15 | MARIMUTHU.S | 1909547 | 15 | MALE | SULLANKUDI | TIRUCHULI | VIRUDHUNAGAR | LE-TRAUMATIC UVEITIS |
| 16 | VIJAY.K | 1909662 | 7 | MALE | THEVUR | THIRUVARUR | THIRUVARUR | RE-TREMATODE INDUCED UVEITIS |
| 17 | SELVI.R | 1909930 | 15 | FEMALE | S.S.COLONY | MADURAI | MADURAI | LE-LEPTOSPIRAL ANTERIOR UVEITIS |
| 18 | RAVI THEJA.M | 1919594 | 6 | MALE | SINGRAWGUNDA | KAREDU | PRAKASAM | RE-RETINAL VASCULITIS-TB |
| 19 | NAVBASKHAN.K | 1929221 | 17 | MALE | MANAMELKUDI | | PUDUKOTTAI | RE-TREMATODE INDUCED UVEITIS |
| 20 | ABIRAMI.A.R | 1920618 | 13 | FEMALE | RAMACHANDRAPURAM | PUDUKOTTAI | PUDUKOTTAI | RE-TB ANTERIOR UVEITIS |
| 21 | SIVARANJANI.R | 1930298 | 8 | FEMALE | PULIAMPATTI | KRISHNAGIRI | DHARMAPURI | LE-R.D. INDUCED UVEITIS |
| 22 | MOHANASUNDARAM.S | 1745520 | 6 | MALE | KAJAPETTAI | TIRUCHIRAPALLI | TIRUCHIRAPALLI | BE-PARS PLANITIS |
| 23 | NIVETHA.P | 1752968 | 2 | FEMALE | MOOLAPETTAI | KARUR | KARUR | BE-ARN |
| 24 | RAVICHANDRAGUPTA.A | 17757176 | 14 | MALE | KOTHAPET | GUNTUR | GUNTUR | LE-SARCOID |
| 25 | NARTHANA.S | 1778187 | 10 | FEMALE | PUDUKOTTAI | PUDUKOTTAI | PUDUKOTTAI | RE-TB CHORIORETINITIS |
| 26 | SARAVANAKUMAR.K | 1854743 | 13 | MALE | RAMESWARAM | | RAMANATHAPURAM | RE-PARS PLANITIS |
| 27 | SATHIYARAJ.R | 1862391 | 15 | MALE | THENKOVANUR/VADAGANUR[P.O] | NEEDAMANGALAM | THIRUVARUR | BE-RETINAL VASCULITIS |
| 28 | VASANTHARAJA.N | 1879230 | 13 | MALE | MANAMELKUDI | PUDUKOTTAI | PADUKOTTAI | RE-TREMATODE INDUCED UVEITIS |
| 29 | ARIYA.P | 1880527 | 2MONTHS | FEMALE | VAKKOPURAM | VENGARA P.O./KANNUR | KANNUR/[KERALA] | RE-TOXOPLASMA CHOROIDITIS |
| 30 | SUBHASHINI.V | 1881584 | 13 | FEMALE | JAVVATHYPATTY | OODANCHATHIRAM | DINDIGUL | BE-MULTIFOCAL CHOROIDITIS |

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|---|---|---|---|---|---|---|---|---|
| 31 | KANAGALAKSHMI.A | 1894201 | 15 | FEMALE | SIVAGANGAI | | SIVAGANGAI | LE-RETINAL VASCULITIS |
| 32 | NIVETHA.S | 1899649 | 10 | FEMALE | GOVINDAKUDI | VALAGAIMAN | TANJORE | TRAUMATIC CATARACT+VH+RH.R.D+UVEITIS |
| 33 | HUSSAI WAHEED.A | 1901892 | 15 | MALE | KANIGAI | MALE | MALDIVES | BE-RESOLVING NEURORETINITIS+LE TOXOPLASMIC RETINO CHOROIDITIS |
| 34 | SATHISH.M | 1967539 | 13 | MALE | SELLUR | MADURAI | MADUARAI | RE LEPTO ANTR UVEITIS |
| 35 | CHINNAPANDI.K | 1979149 | 13 | MALE | MUTHAIAHPURAM | TUTICORIN | TUTICORIN | RE-PANUVEITIS+TRD+TOXOCARIASIS |
| 36 | MUTHUKRISHNA KUMARAN.G | 1978905 | 8 | MALE | KUTHUKKALVALSI | TENKASI | TIRUNELVELI | LE-PARS PLANIAIS |
| 37 | GANESH BABU.B | 1978645 | 13 | MALE | PARAMAKUDI | | RAMANATHAPURAM | LE CHRONIC NON GR. U/L ANT UVEITIS D/D HERPETIC/SARCOID/FUCH,S |
| 38 | MANICKAVEL.M | 1977627 | 13 | MALE | MELAPPATTY | KARUR | KARUR | RE-TREMATUDE INDUCED UVEITIS |
| 39 | VINOTH.J | 1977642 | 13 | MALE | ALANGUDI | | PUDUKKOTTAI | RE-TREMATODE INDUCED GRANULOMA |
| 40 | VINOBHARATHI.B | 1973885 | 13 | MALE | ARIYANUR | VEERAPANDI | SALEM | FUCH'S HETEROCHROMIC IRIDOCYCLITIS |
| 41 | KANNAN.R | 1972405 | 13 | MALE | PITCHAMPATTI | KARIAPATTI | VIRUDHUNAGAR | RE-MULTIFOCAL CHOROIDITIS TB |
| 42 | SARATH.S | 1958310 | 15 | MALE | KOLENCHIRA | PALA | KOTTAYAM[KERALA] | HLA B27 RELATED NON GRANULOMATOUS ANTERIOR UVEITIS |
| 43 | HASIR.M | 1957938 | 10 | MALE | NAGORE | | NAGAPATTINAM | LE TREMATODE INDUCED UVEITIS |
| 44 | MANIMALA.M | 1957757 | 12 | FEMALE | K.O.N.PALAYAM | PATTUKOTTAI | TANTORE | BE-HEALED CHORIO RETINAL SCAR+RE MACULAR INVOLVEMENT |
| 45 | DEEPAK JUSTIN.S | 1953930 | 10 | MALE | VARAGANERI | TIRUCHIRAPALLI | TIRUCHIRAPALLI | BE-PARS PLANITIS |
| 46 | RAHAMATHU NISHA.M | 1951416 | 9 | FEMALE | KOTTAIPATTINAM | MANAMELKUDI | PUDUKKOTTAI | LE-TREMATODE INDUCED UVEITIS |
| 47 | KALAIVANI.V | 1951057 | 15 | FEMALE | KAMARAJAPURAM/ THIRUPAPCHATHY | SIVAGANGAI | SIVAGANGAI | LE EPI SCLERITIS |
| 48 | SARALA DEVI.N | 1950769 | 15 | FEMALE | NADUVAKARAI | POUNDRIGAPURAM/ KUMBAKONAM | TANJORE | LE-ACUTE ENDOGENOUS ENDOPHTHALMITIS |
| 49 | MARIYAM SHIFA.M | 1946205 | 15 | FEMALE | G.SENTUGE | MALE | MALE/ MALDIVES | BE OLD TOXOPLASMIC RETINITIS |
| 50 | AKSHAY.V | 1939810 | 5Y 6M | MALE | SEKARIPURAM | PALAGHAT | PALGHAT [KERALA] | BE-PARS PLANITIS |
| 51 | VIJAYARANI.G | 1936294 | 15 | MALE | VALLALAPATTI | AMMACHATHIRAM | PUDUKOTTAI | BE RECCURENT EPISCLERITIS |
| 52 | KANNIKA.S | 1933374 | 10 | FEMALE | NAGERKOIL | | KANNIYAKUMARI | BE-RECCURENT GR. ANT UVEITIS |
| 53 | HAFIZ.T.K | 1891229 | 3 | MALE | CHALIYAM | KOZHIKODE | KOZHIKODE [KERALA[ | RE-TREMATODE A.C. GRANULOMA+ LE CONJ CYST |
| 54 | MANIKANDAN.V | 1824105 | 13 | MALE | ADIRAMAPATTINAM | TANJORE | TANJORE | RE-RECCURENT PARS PLANITIS |
| 55 | PARTHASARATHI.S | 1818221 | 13 | MALE | REDDIAR CHATTIRAM | DINDIGUL | DINDIGUL | RE RECCURENT EPISCLERITIS+LE-SCLEROKERATITIS |
| 56 | SHIKHA SHAJI.S | 1811981 | 12 | FEMALE | MAVELIKARA | ALLEPEY | ALLEPEY [KERALA] | BE-CHORIORETINAL GRANULOMA-SARCOIDOSIS |
| 57 | ISWARAN.M | 1758946 | 10 | FEMALE | MAYILADUTHURAI | NAGAPPATINAM | NAGAPATTINAM | LE-A.C. GRAULOMA-TB/SARCOID |
| 58 | VIJAYA KALESWARI.M | 1743961 | 12 | FEMALE | SIVAKASI | SIVAKASI | VIRUDHUNAGAR | RE- TB CHOROIDITIS |
| 59 | VIJAY.M | 1678003 | 8 | MALE | KUMBAKONAM | KUMBAKONAM | TANJORE | LE-PARS PLANITIS |
| 60 | ALINA ANTONY.A | 1973570 | 3 | FEMALE | CHANAGACHERRY | KOTTAYAM | KOTTAYAM[KERALA] | RE-ANTERIOR UVEITIS-TB_COMPLICATED CATARACT |

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|---|---|---|---|---|---|---|---|---|
| 61 | RENU PRIYA.S | 1570295 | 3 | FEMALE | ELLIS NAGAR/MADURAI | MADURAI | MADURAI | RE- PARS PLANITIS-TB/SARCOID |
| 62 | YASMIN.M | 1516389 | 15 | FEMALE | PARTHIBANOOR | RAMANATHAPURAM | RAMANATHAPURAM | BE- RETINAL VASCULITIS |
| 63 | JAMAL UMMAR.H | 2013548 | 13 | MALE | SIVAKASI | | VIRUTHUNAGAR | RE- HEALED CHORIO RETINAL PATCH-TOXOCARA/TOXOPLASMA |
| 64 | PAVITHRA.S | 2012744 | 6 | FEMALE | SEKKALAI | KARAIKUDI | SIVAGANGAI | LE-VIRAL KERATO UVEITIS-POST MUMPS |
| 65 | SATHISH KUMAR.S | 2010675 | 9 | MALE | MUTHUPATHY | SIVAGANGAI | SIVAGANGAI | LE FOCAL VASCULITIS |
| 66 | SONARAJU.R | 2010132 | 7 | FEMALE | ERAMATHOOR | CHENNITHALA/ MANNAR/ ALLEPEY | ALLEPEY [KERALA] | LE- TOXOCARA GRANULOMA/ CHRONIC POSTERIOR UVEITIS |
| 67 | PRIYADHARSHINI.V | 2007376 | 2 | FEMALE | KEELAKADAMBUR | MELAKADAMBUR/ KATTUMANNARKOIL | CUDDALORE | BE-ARN |
| 68 | MURUGANANDAM.P | 1999759 | 15 | MALE | REDDIPALAYAM/ VINAHAGAI P.O | PRIYALUR | PERAMBALUR | LE-FUCH'S HETEROCHROMIC IRIDOCYCLITIS+COMPLICATED CATARACT |
| 69 | MUSTAFA.M | 1999736 | 15 | MALE | PUDUPARAMBIL | MALAPPURAM | MALAPPURUM | RE- TREMATODE INDUCED A.C. GRANULOMA+LOCALISED CATARACT |
| 70 | RADHA.S.M | 1994718 | 15 | FEMALE | SIMMAKKAL | MADURAI | MADURAI | RE- CYSTICERCOSIS VITRITIS+INTRAOCULAR CYSTICERCOSIS |
| 71 | SAM.A | 1993530 | 13 | MALE | BATLAGUNDU | DINDIGUL | DINDIGUL | RE-CHRONIC N.G. INTERMEDIATE UVEITIS-LEPTOSPIRAL/ TB |
| 72 | VIMAL RAJ.K | 1989819 | 14 | MALE | THIRUPUGALUR | NAGAPPATINAM | NAGAPATTINAM | BE- PAN UVEITIS-TB |
| 73 | VIJAYALAKSHMI.S | 1988831 | 14 | MALE | MAPPADUGAI | MAYILADUTHURAI | NAGAPATTINAM | LE- OLD RESOLVED UVEITIS / TOXOCARA GRANULOMA |
| 74 | KANNAN.R | 1971596 | 14 | MALE | GUDULUR | | THENI | BE-VKH |
| 75 | DHANYA. T . THOMAS | 1934182 | 16 | FEMALE | BETHAL P.O. | IDUKKI | IDDUKI [KERALA] | LE-IRIS GANULOMA-TB |
| 76 | ALEXA MICHAEL.J | 2048149 | 5 | FEMALE | NEENDOOR | KOTTAYAM [KERALA] | KOTTAYAM[KERALA] | BE-VKH |
| 77 | THAMIMA.M | 2030060 | 5 | FEMALE | MARAIKKAVALASAI /UDAYANADU/ P. O | PERAVOORANI | TANJORE | LE-TRAUMATIC UVEITIS/FUNGAL ENDOPHTHALMITIS/PHACOANAPHYLACTIC UVEITIS |
| 78 | CHAITANYA.V | 2017578 | 7 | MALE | KRISHNA | | KRISHNA [A.P.] | BE-PARS PLANITIS |
| 79 | NAINA AGARWAL.R | 2010787 | 10 | FEMALE | ROURKELA | SUNDARGARH | SUNDARGARH [ORISSA] | BE-PARS PLANITIS TB |
| 80 | FASNA.K | 2104915 | 15 | FEMALE | NILAMBUR | MALAPPURAM | MALAPPURAM [KERALA] | LE-VASCULITIS |
| 81 | ANJANA MOHAN.M | 2104666 | 12 | FEMALE | UPPUTHARA-KATTAPPANA | IDUKKI | IDDUKI [KERALA] | LE-JUXTA PAPPILARY CHRIO RETINITIS |
| 82 | KAVIN KUMAR.P | 2098187 | 9 | FEMALE | PERAMBALUR | | PERAMBALUR | BE- PARS PLANITIS |
| 83 | PRASHANTHI.R | 2091622 | 14 | FEMALE | PUDUKOTTAI | PUDUKOTTAI | PUDUKOTTAI | BE-VKH |
| 84 | BENASIR BEGAM.S | 2089212 | 12 | FEMALE | MEENAKSHIPURAM | KARAIKUDI | SIVAGANGAI | LE-TREMATODE INDUCED A.C. GRANULOMA |
| 85 | THIRUPATHAMMA.V | 2080450 | 15 | FEMALE | BUCHINAYA KADRIGA | CHITTOOR | CHITTOR [A.P.] | RE TRAUMATIC UVEITIS] |
| 86 | HARI KRISHNAN.P | 2097118 | 8 | MALE | KODAMPAKKAM | CHENNAI | CHENNAI | BE INTERMEDIATE UVEITIS JRE/TB |
| 87 | PRIYANKA.S | 2071102 | 9 | FEMALE | MATHU KANMAI / AUDISURULI P.O. | KALAYARKOIL | SIVAGANGAI | LE-TOXOPLASMA ENDOPHTHALMITIS |
| 88 | NAMBU.M | 2071102 | 9 | FEMALE | KOTTAI PATTINAM | ARANTHANGI | PUDUKKOTTAI | LE- TREMATODE INDUCED A.C. GRANULOMA |
| 89 | DINESH KUMAR.N | 2049690 | 15 | MALE | THIRUCHENGODE | | NAMAKKAL | LE-ARN |
| 90 | ARUNKUMAR.K | 1631089 | 15 | MALE | PANRUTTI | PANRUTTI | CUDDALORE | BE- PARS PLANITIS |

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| 91 | MUTHU SELVI.M | 1924937 | 9 | FEMALE | PERUMALPURAM | TIRUNELVELI | TIRUNELVELI | BE- RETINOCHOROIDITIS |
| 92 | ARUNJUNAIKUMAR.M | 2039594 | 6 | MALE | NAGALINGAM COMPOUND /MADURAI | | MADURAI | LE-PARS PLANITIS |
| 93 | MARTIN LUTHER.A | 2049781 | 13 | MALE | PANDIAN NAGAR /VIRUDHU NAGAR | | VIRUDHUNAGAR | RE- RETINAL VASCULITIS |
| 94 | SRI KUMAR.S | 2056455 | 12 | MALE | MUHAMMA | ALLEPEY | ALLEPEY [KERALA] | LE- CHRONIC N.G PANUVEITIS VIRAL/ TB /SYPHILIS |
| 95 | ASHOK.T.R | 2058547 | 7 | MALE | PARAVAI | MADURAI | MADURAI | RE- ENDOGENOUS ENDOPHTHALMITIS |
| 96 | DINESH KUMAR.E | 2060243 | 15 | MALE | VEPPANAM PUDUR | VASANTHAPURAM P.O. | NAMAKKAL | RE- R.D. INDUCED UVEITIS |
| 97 | MANIKUMAR.K | 2064510 | 15 | MALE | KOTTAIKALAM | ANDIPATTU | THENI | IDIOPATHIC INTERMEDIATE UVEITIS |
| 98 | AISWARYA.K | 2065306 | 1 | FEMALE | UPPARAPATHY | UTHANKARAI | KRISHNAGIRI | RE- ENDOGENOUS ENDOPHTHALMITIS |
| 99 | RAJABUNISHA.S | 2069919 | 12 | FEMALE | GOPALAPATTINAM | MEEMISAL | PUDUKKOTTAI | PUDUKKOTTAI |
| 100 | KUMAR.K | 2072890 | 15 | MALE | VIRUTHUNAGAR | | VIRUTHUNAGAR | LE-TRAUMATIC UVEITIS |
| 101 | VISHNU.B | 2015737 | 8 | MALE | KAYAKKAL | PAIMARA | KOZHIKODE [KERALA] | RE- TREMATODE INDUCED UVEITIS/ GRANULOMA |
| 102 | PANDEESWARAN.S | 2015014 | 6 | MALE | THIRUVIRUDAN PATTI / SETTUDUIYAN PATTI. P.O. | SATHUR | VIRUDHUNAGAR | RE- TREMATODE INDUCED GRANULOMA |
| 103 | SARATH.S | 2014525 | 14 | MALE | KALIMANOOR | TRIVANDRUM | TRIVANDRUM [KERALA] | RE- RETINO CHOROIDITIS |
| 104 | ARULANANDI.S | 2014355 | 15 | MALE | UTHAMAPALAYAM | | THENI | LE FUCH'S HETEROCHROMIC IRIDOCYCLITIS |
| 105 | VIGNESH.G | 1995205 | 15 | MALE | KOVILPAPPAKUDI | MADURAI | MADURAI | LE-TRAUMATIC UVEITIS |
| 106 | NASEERA.S | 1979275 | 14 | FEMALE | MASUTHIPURAM /KALAVAIMANDAL | NELLORE | NELLORE [A.P.] | LE- MACULAR CHOROIDITIS |
| 107 | NAMBI.M | 2049951 | 7 | FEMALE | KOTTAIPATTINAM | ARANTHANGI | PUDUKKOTTAI | LE- TREMATODE INDUCED A.C. GRANULOMA |
| 108 | PRAVEEN.R | 2043982 | 10 | MALE | THIRUKAMPULIUR | KARUR | KARUR | BE-ACUTE POSTERIOR UVEITIS |
| 109 | CHELLA PANDI.P | 2039927 | 8 | MALE | THIRUMALAPURUM | MADURAI | MADURAI | LE- TB ANTERIOR UVEITIS |
| 110 | PETCHIAMMAL.M | 2033677 | 5 | FEMALE | KONDAMPATTI /AYYANAPURAM P.O. | USILAMPATTI | MADURAI | |
| 111 | VIDYALAKSHMI.S | 2032560 | 10 | FEMALE | PONDICHERRY | | PONDICHERRY | RE-POSYERIOR UVEITIS |
| 112 | MOKSHA.S | 2025228 | 4 | FEMALE | ERODE | | ERODE | BE- CHRONIC UVEITIS- JRA/ SARCOIDOSIS |
| 113 | JAYARAMAN.R | 2025176 | 9 | MALE | USILAMPATTI | | MADURAI | BE-PARS PLANITIS |
| 114 | BEULA.K | 2018255 | 15 | FEMALE | PERULAMPATTI | ETTAYAPURAM | TUTICORIN | LE -NON GRANULOMATOUS PAN UVEITIS |
| 115 | RAJAMOHAN.G | 1988070 | 12 | MALE | PATHUKATTU/ MANICKAPANTHA. P.O. | THARNGAMPADI | NAGAPATTINAM | RE- TREMATODE INDUCED A.C. GRANULOMA |
| 116 | ABDUL RAHUMAN.S | 1932196 | 15 | MALE | JEEVANAGAR | MADURAI | MADURAI | ANTERIOR UVEITIS |
| 117 | PRINCE.M | 1971188 | 12 | MALE | SHENBAGANUR | KODAIKANAL | DINDIGUL | RE- CMV RETINITIS+HIV |
| 118 | MUTHURAMU | 2116976 | 15 | MALE | KALYANAPOONDI | VILLUPURAM | VILLUPURAM | R.D.INDUCED UVEITIS |
| 119 | ABDUL THARIK | 2104771 | 17 | MALE | GUDALUR | THENI | THENI | INTERMEDIATE UVEITIS |
| 120 | ROZARIO PAUL | 2089184 | 10 | MALE | RATHINAPURI | COIMBATORE | COIMBATORE | PARS PLANITIS |

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|---|---|---|---|---|---|---|---|---|
| 121 | PRASHANTHI. | 2091622 | 14 | MALE | CHARLES NAGAR | PUDUKOTTAI | PUDUKKOTTAI | VKH |
| 122 | NARAYANAN | 2118474 | 16 | MALE | ODAIPATTI | MADURAI | MADURAI | TRAUMATIC UVEITIS |
| 123 | NAVEEN BHARATHI | 2118870 | 11 | MALE | THATHANERI | MADURAI | MADURAI | ANTERIOR UVEITIS |
| 124 | SANGEETHA | 2118703 | 11 | MALE | SEMBATTUR | RAJAKULATHUR | PUDUKKOTTAI | TOXOPLASMOSIS UVEITIS |
| 125 | KARTHIGAI SELVI | 2119947 | 17 | FEMALE | VELLIKURICHI | THIRUPPACHITHI | SIVAGANGAI | HEALED TOXOPLASMOSIS |
| 126 | PARTHIBAN | 2108813 | 14 | MALE | UTHUKULI | VADIPATTI | MADURAI | ACTE RETINAL NECROSIS |
| 127 | SUNDAR | 2121337 | 16 | MALE | VASUDEVANALLUR | SIVAGIRI | THIRUNELVELI | VASCULITIS+ CHRONIC GRANULOMA |
| 128 | INDRA | 2107261 | 15 | FEMALE | MULLIPPADI | THIRUCHIRAPALLI | THIRUCHIRAPALLI | PARS PLANITIS |
| 129 | KANAGARAJ | 2042838 | 14 | MALE | VANAGAPURAM | KAMUDHI | RAMANATHAPURAM | TUBERCULOSIS |
| 130 | MD.ASIF | 2121414 | 18 | MALE | GANDHAKOALHI MAGU | M.FAIRY LIGHT | MALDIVES | TOXOPLASMOSIS UVEITIS |
| 131 | SEETHALAKSHMI | 1934148 | 13 | FEMALE | VILLAPURAM | MADURAI | MADURAI | NODULAR SCELERITIS |
| 132 | THANGARAJ | 2099532 | 14 | MALE | WATAP | SRIVILLIPUTHUR | VIRUDHUNAGAR | VKH |
| 133 | SAYED ABDUL JAFER | 21247261 | 14 | MALE | ULAVAPADU | PRAKASAM | PRAKASAM | TOXOPLASMOSIS UVEITIS |
| 134 | TAMILSELVAN | 1293506 | 11 | MALE | RAMESWARAM | RAMANATHAPURAM | RAMANATHAPURAM | SARCOID |
| 135 | SACHIN | 2126428 | 8 | MALE | SATHINAKULAM | KOLLAM | KOLLAM | PARS PLANITIS |
| 136 | CHELLADURAI | 1944557 | 17 | MALE | NEW NAGAR | CUDDALORE | CUDDALORE | CHRONIC ANTERIOR UVEITIS |
| 137 | ARSATH ALI | 191696 | 5 | MALE | SHOLAPURAM | KUMBAKONAM | TANJORE | PAN UVEITIS |
| 138 | VEERALAKSHMI | 1740147 | 12 | FEMALE | ALLINAGARAM | THENI | THENI | RESOLVED PARS PLANITIS |
| 139 | POWSAL HG | 2127678 | 10 | MALE | S.P. PATTINAM | RAMANATHAPURAM | RAMANADHAPURAM | TREMATODE INDUCED A.C. GANULOMA |
| 140 | MAVEERAN | 2127550 | 8 | MALE | SATHAM PADI | NATHAM | DINDIGUL | TOXOPLASMOSIS/ EXUDATIVE VASCULOPATHY |
| 141 | MUNEES KUMAR | 2113350 | 10 | MALE | VANNANKUTTAI/ MEEMISAL | AVUDAIYARKOVIL | PUDUKKOTTAI | TREMATODE INDUCED A.C. GANULOMA |
| 142 | SUBIN JOY | 2123400 | 9 | MALE | VALLAMKULAM | PATHANAMTHITTA | PATHANAMTHITTA[KERALA] | POSTERIOR UVEITIS |
| 143 | DHIVAKAR | 2083891 | 7 | MALE | MELAKUDIERUPPU | JEYAMKONDAM | PERAMBALUR | TREMATODE INDUCED A.C. GANULOMA |
| 144 | NISHA | 2113245 | 3 | FEMALE | UDUMBANCHOLA | IDUKKI | IDDUKI [KERALA] | ENDOGENOUS ENDOPHTHALMITIS |
| 145 | AJITHKUMAR | 2131042 | 9 | MALE | NARIPAIYUR | RAMANADHAPURAM | RAMANADHAPURAM | TUBERCULOSIS |
| 146 | SABARI NANDINI | 2131838 | 10 | FEMALE | KOTTAYUR | KARAIKUDI | SIVAGANGAI | VKH |
| 147 | SAHUL HAMEED | 1986543 | 7 | MALE | ODDANCHATRAM | ODDANCHATRAM | DINDIGUL | SARCOIDOSIS |
| 148 | BALA SUBRAMANI | 2113557 | 16 | MALE | UDAYANATHAPURAM | ARUPPUKOTTAI | VIRUTHUNAGAR | RETINAL VASCULITIS |
| 149 | KANNAN.K | 2053803 | 16 | MALE | VELLAKULAM | THIRUMANGALAM | MADURAI | TUBERCULOSIS |
| 150 | PRATHAB | 2136153 | 11 | MALE | VARASUNADU | THENI | THENI | ANTERIOR UVEITIS |

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|---|---|---|---|---|---|---|---|---|
| 151 | JIJU | 1797114 | 17 | MALE | KUNHIMANGALAM | KANNUR | KANNUR/[KERALA] | SARCOIDOSIS |
| 152 | SARANYA | 2132199 | 17 | MALE | AVANIYAPURAM | MADURAI | MADURAI | PARS PLANITIS+SARCOIDOSIS |
| 153 | DEV ANAND | 1467427 | 13 | MALE | VADUGAPATTI | PERIAKULAM | THENI | PARS PLANITIS |
| 154 | PRIYANKA. | 2071102 | 9 | FEMALE | ANDISURULI | KALAYARKOIL | SIVAGANGAI | PARS PLANITIS |
| 155 | MAI MOONA | 2143063 | 12 | FEMALE | KUTHUPARAMBU | ERUVATTY | KANNUR/[KERALA] | JRA |
| 156 | SHAHANA | 1073263 | 12 | FEMALE | KAYAMKULAM | ALLEPEY | ALLEPEY [KERALA] | PAN UVEITIS |
| 157 | MANGAYARKARASI | 2144542 | 12 | FEMALE | SAMAYAPURAM | LALGUDI | TIRUCHIRAPALLI | VIRAL UVEITIS |
| 158 | RAMACHANDRAN | 2140600 | 17 | MALE | CHATHIRA REDDIARPATTY | VIRUDHUNAGAR | VIRUDHUNAGAR | TUBERCULOSIS VASCULITIS |
| 159 | SUSEELA | 2145719 | 10 | FEMALE | KUNNATHU VEEDU/ AIRAMAM | KOLLAM | KOLLAM [KERALA] | BILATERAL CHRONIC UVEITIS |
| 160 | IBRAHIM MUFLILI.H | 2145727 | 14 | MALE | HOTEL HIGH LAND | TRIVANDRUM | TRIVANDRUM [KERALA] | TOXOPLASMOSIS SCAR |
| 161 | LEEMA CATHRINE | 2149563 | 16 | FEMALE | THENKARAI | PERIYAKULAM | THENI | LEPTOSPIROSIS |
| 162 | VELMURUGAN | 2149536 | 15 | MALE | VIRUSAMATHU URANI/ AIR PORT ROAD | MADURAI | MADURAI | BILATERAL GRANULOMATOUS UVEITIS |
| 163 | RAMKUMAR | 2150273 | 17 | MALE | THIRUMANGALAM | THIRUMANGALAM | MADURAI | CHRONIC NONGRANULOMATOUS ANTERIOR UVEITIS |
| 164 | LAKSHMI MANIKANDAN | 2150495 | 14 | MALE | BAGATH NAGAR | PALAKOL VIL | WEST GODAVARI | MULTI FOCAL CHOROIDITIS |
| 165 | HIMA STEPHAN | 2151884 | 14 | FEMALE | KERALAPURAM | KOLLAM | KOLLAM | POSTERIOR UVEITIS |
| 166 | RAJA DURAI | 2060957 | 11 | MALE | KODIKULAM | MADURAI | MADURAI | ?VIRAL/ ?TUBERCULOSIS |
| 167 | BABY MUSKAN JAIN | 1975726 | 7 | FEMALE | SARNI/ BATAL | BATALGEN | BETAL GEN{M. P.] | PARS PLANITIS |
| 168 | VIGNESWARAN | 1685409 | 17 | MALE | THIRUPARAMKUNDRAM | MADURAI | MADURAI | ?LEPTOSPIROSIS |
| 169 | KARUPPASAMY | 2152764 | 16 | MALE | PANTHALKUDI ROAD | ARUPPUKOTTAI | VIRUDHUNAGAR | SCLERITIS |
| 170 | DHARANI | 2148580 | 5 | FEMALE | VASANTHA NAGAR | TIRUCHIRAPALLI | TIRUCHIRAPALLI | SUBRETINAL GANULOMA/ ?T.B |
| 171 | THANGAMANI | 1991076 | 17 | MALE | PUDUPATTY | EDAYAMELUR | SIVAGANGAI | VASCULITIS |
| 172 | TAMILARASI | 2153420 | 15 | FEMALE | THONDAMANKINOM | KRISHNARAYAPURAM | KARUR | RECURRENT EPISCLERITIS |
| 173 | SEKAR | 609141 | 14 | MALE | ALAGUDEVADIAPURAM | SRIVILLIPUTHUR | VIRUDHUNAGAR | INTERMEDIATE UVEITIS |
| 174 | SILPA | 2153253 | 9 | FEMALE | LAIKADU | CHANGANCHERU | KOTTAYAM[KERALA] | D U S N |
| 175 | KRISHNA PRASAD | 1641170 | 25 | MALE | KARAMCHEDU | PRAKASAM | PRAKASAM{A.P.] | INTERMEDIATE UVEITIS |
| 176 | MARESWARI | 609540 | 13 | FEMALE | SETTUR | VIRUDHUNAGAR | VIRUDHUNAGAR | LENS PROTEIN INDUCED UVEITIS |
| 177 | ANITHA | 2154682 | 17 | FEMALE | PUDUKKOTTAI | | PUDUKKOTTAI | LEPTOSPIROSIS UVEITIS |
| 178 | RAMESH KUMAR | 2027066 | 19 | MALE | K.PUDUR | MADURAI | MADURAI | NON GRNULOMATOUS UVEITIS |
| 179 | ANANDHA MEENAKSHI | 991514 | 17 | FEMALE | SELLUR | MADURAI | MADURAI | NON GRANULOMATOUS ANTERIOR UVEITIS |
| 180 | VENKATESWARAN | 1555353 | 13 | MALE | SAMAYANALLUR | VADIPATTY | MADURAI | SCLERITIS |

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|---|---|---|---|---|---|---|---|---|
| 181 | DHANA LAKSHMI | 21555828 | 17 | FEMALE | MANAMADURAI | | SIVAGANGAI | RECURRENT EPISCLERITIS |
| 182 | SHANMUGA PRABHU | 1824564 | 17 | MALE | THIRUVEGAMBATHUR | SIVAGANGAI | SIVAGANGAI | VKH |
| 183 | VELARASI | 610218 | 9 | FEMALE | K.KULATHUKURICHI | VRIDDHACHALAM | CUDDALORE | ?TUBERCULOSIS |
| 184 | RAJA | 2156017 | 8 | MALE | PENNAGARAM | PENNAGARAM | DHARMAPURI | TREMATODE INDUCED A.C. GANULOMA |
| 185 | VIKRAM | 2152129 | 1Y 6M | MALE | ANKIRANPATTY | KULAVAIPATTY | PUDUKKOTTAI | ANTERIOR UVEITIS |
| 186 | SUGANYA | 1645282 | 13 | FEMALE | BHEL TOWNSHIP | TIRUCHIRAPALLI | TIRUCHIRAPALLI | PAN UVEITIS |
| 187 | ANU | 2157001 | 13 | FEMALE | PALAIGRAM | UDUMBANCHOLA | IDUKKI[KERALA] | TOXOPLASMOSIS |
| 188 | POOJITHA | 2157119 | 4 | FEMALE | ONGOLEMANDAL | PRAKASAM | PRAKASAM | GRANULOMATOUS UVEITIS |
| 189 | PONNAMAL | 2158988 | 17 | FEMALE | PADAMATHUR | SIVAGANGAI | SIVAGANGAI | NON GANULOMATOUS UVEITIS |
| 190 | MUTHU KUMAR | 611784 | 16 | MALE | K.K.NAGAR | MADURAI | MADURAI | BILATERAL MULTIFOCAL CHOROIDITIS |
| 191 | SULFIYA SUHAIL | 2160297 | 14 | FEMALE | KUREEPALLI VIL | KOLLAM | KOLLAM[KERALA] | TOXOPLASMOSIS |
| 192 | NESAMANI KANDAN | 2160794 | 13 | MALE | NARIMEDU / GORIPALAYAM | MADURAI | MADURAI | NON GRANULOMATOUS ANTERIOR UVEITIS |
| 193 | LIJO SUNY | 1015573 | 16 | MALE | PUNALUR | QUILON | KOLLAM[KERALA] | PARS PLANITIS |
| 194 | SHANMUGARAJ | 2161885 | 17 | MALE | DURAISAMYPURAM/KOMBAI | UTHAMAPALAYAM | THENI | HLA B27 RELATED ANTERIOR UVEITIS |
| 195 | SUNDARESWARI | 613467 | 16 | FEMALE | KULAMANGALAM | MADURAI | MADURAI | LEPTOSPIROSIS |
| 196 | JAGADEESWARI | 1942769 | 17 | FEMALE | CUMBAM | | THENI | SCLERO KERATITIS ?TB |
| 197 | PREMA | 613445 | 9 | FEMALE | VALLUVAR NAGAR | KRISHNAGIRI | KRISHNAGIRI | PERIPHERAL GRANULOMA |
| 198 | AMAITHI SANGU | 2162210 | 14 | FEMALE | SIVAGANGAI | | SIVAGANGAI | SCLERITIS |

| Sl.No. | Name of the patient | MR No | Age | Gender | Hamlet/Village/town/city | | District | Diagnosis |
|---|---|---|---|---|---|---|---|---|
| 1 | THIRUMURUGAN.K | 1891620 | 11 | MALE | VENTHONI P.O/PARAMAKUDI | PARAMAKUDI | RAMANATHAPURAM | TB |
| 2 | GOWTHAM.P | 1892523 | 7 | MALE | DINDIGUL | DINDIGUL | DINDIGUL | VIRAL RETINITIS |
| 3 | VASANTH.K | 1895281 | 14 | MALE | SHOLAVANDAN | MADURAI | MADURAI | IDIOPATHIC |
| 4 | ANANDKUMAR.A | 1896849 | 15 | MALE | DEVIKURICHI | ATTUR | SALEM | IDIOPATHIC |
| 5 | PALANIKUMAR.M | 1875791 | 6 | MALE | JAKKAMPATTI | ANDIPATTI | THENI | TB CHOROIDAL GRANULOMA |
| 6 | MOHAMMED AGRAMSHA.N | 1877053 | 4 | MALE | MADHUKKUR | PATTUKOTTAI | TANJORE | PARS PLANITIS |
| 7 | SHALINI.K | 1843158 | 15 | FEMALE | VANGAL MARIGOUNDERPALAYAM/KUPPUCHIPALAYAM | KARUR | KARUR | VKH |
| 8 | RAMIEENA.M | 1886458 | 13 | FEMALE | PURANGU | MALAPPURAM | MALAPPURAM | RE CHOROIDAL GRANULOMA-SARCOID/TB |
| 9 | KIDIYON.J | 1870965 | 15 | MALE | NOCHIODAIPATTY | KOOVANUTHUR | DINDIGUL | ACUTE RETINAL VASCULITIS |
| 10 | ABDULLAH.M | 1817676 | 15 | MALE | NORTH ULLANAM | KOZHIKODE | KOZHIKODE | TB GRANULOMATOUS UVEITIS |
| 11 | SUNDARAPANDIAN.G | 1805149 | 13 | MALE | THIRUMANGALAM | THIRUMANGALAM | MADURAI | TB VASCULITIS |
| 12 | ALAGURANI.S | 1590582 | 12 | FEMALE | KUTTIMEKKARPATTI | VADIPATTI | MADURAI | JRA |
| 13 | AISWARYA.G | 1649283 | 14 | FEMALE | Y.OTHAKADAI | MADURAI | MADURAI | PARS PLANITIS |
| 14 | SURUTHI.R | 1907762 | 15 | FEMALE | KILUKKUPARAMBILLE | PATHANAMTHITTA | PATHANAMTHITTA[KERALA] | BE-VKH |
| 15 | MARIMUTHU.S | 1909547 | 15 | MALE | SULLANKUDI | TIRUCHULI | VIRUDHUNAGAR | LE-TRAUMATIC UVEITIS |
| 16 | VIJAY.K | 1909662 | 7 | MALE | THEVUR | THIRUVARUR | THIRUVARUR | RE-TREMATODE INDUCED UVEITIS |
| 17 | SELVI.R | 1909930 | 15 | FEMALE | S.S.COLONY | MADURAI | MADURAI | LE-LEPTOSPIRAL ANTERIOR UVEITIS |
| 18 | RAVI THEJA.M | 1919594 | 6 | MALE | SINGRAWGUNDA | KAREDU | PRAKASAM | RE-RETINAL VASCULITIS-TB |
| 19 | NAVBASKHAN.K | 1929221 | 17 | MALE | MANAMELKUDI | | PUDUKOTTAI | RE-TREMATODE INDUCED UVEITIS |
| 20 | ABIRAMI.A.R | 1920618 | 13 | FEMALE | RAMACHANDRAPURAM | PUDUKOTTAI | PUDUKOTTAI | RE-TB ANTERIOR UVEITIS |
| 21 | SIVARANJANI.R | 1930298 | 8 | FEMALE | PULIAMPATTI | KRISHNAGIRI | DHARMAPURI | LE-R.D. INDUCED UVEITIS |
| 22 | MOHANASUNDARAM.S | 1745520 | 6 | MALE | KAJAPETTAI | TIRUCHIRAPALLI | TIRUCHIRAPALLI | BE-PARS PLANITIS |
| 23 | NIVETHA.P | 1752968 | 2 | FEMALE | MOOLAPETTAI | KARUR | KARUR | BE-ARN |
| 24 | RAVICHANDRAGUPTA.A | 17757176 | 14 | MALE | KOTHAPET | GUNTUR | GUNTUR | LE-SARCOID |
| 25 | NARTHANA.S | 1778187 | 10 | FEMALE | PUDUKOTTAI | PUDUKOTTAI | PUDUKOTTAI | RE-TB CHORIORETINITIS |
| 26 | SARAVANAKUMAR.K | 1854743 | 13 | MALE | RAMESWARAM | | RAMANATHAPURAM | RE-PARS PLANITIS |
| 27 | SATHIYARAJ.R | 1862391 | 15 | MALE | THENKOVANUR/VADAGANUR[P.O] | NEEDAMANGALAM | THIRUVARUR | BE-RETINAL VASCULITIS |
| 28 | VASANTHARAJA.N | 1879230 | 13 | MALE | MANAMELKUDI | PUDUKOTTAI | PADUKOTTAI | RE-TREMATODE INDUCED UVEITIS |
| 29 | ARIYA.P | 1880527 | 2MONTHS | FEMALE | VAKKOPURAM | VENGARA P.O./KANNUR | KANNUR/[KERALA] | RE-TOXOPLASMA CHOROIDITIS |
| 30 | SUBHASHINI.V | 1881584 | 13 | FEMALE | JAVVATHYPATTY | OODANCHATHIRAM | DINDIGUL | BE-MULTIFOCAL CHOROIDITIS |

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|---|---|---|---|---|---|---|---|---|
| 31 | KANAGALAKSHMI.A | 1894201 | 15 | FEMALE | SIVAGANGAI | | SIVAGANGAI | LE-RETINAL VASCULITIS |
| 32 | NIVETHA.S | 1899649 | 10 | FEMALE | GOVINDAKUDI | VALAGAIMAN | TANJORE | TRAUMATIC CATARACT+VH+RH.R.D+UVEITIS |
| 33 | HUSSAI WAHEED.A | 1901892 | 15 | MALE | KANIGAI | MALE | MALDIVES | BE-RESOLVING NEURORETINITIS+LE TOXOPLASMIC RETINO CHOROIDITIS |
| 34 | SATHISH.M | 1967539 | 13 | MALE | SELLUR | MADURAI | MADUARAI | RE LEPTO ANTR UVEITIS |
| 35 | CHINNAPANDI.K | 1979149 | 13 | MALE | MUTHAIAHPURAM | TUTICORIN | TUTICORIN | RE-PANUVEITIS+TRD+TOXOCARIASIS |
| 36 | MUTHUKRISHNA KUMARAN.G | 1978905 | 8 | MALE | KUTHUKKALVALSI | TENKASI | TIRUNELVELI | LE-PARS PLANIAIS |
| 37 | GANESH BABU.B | 1978645 | 13 | MALE | PARAMAKUDI | | RAMANATHAPURAM | LE CHRONIC NON GR. U/L ANT UVEITIS D/D HERPETIC/SARCOID/FUCH,S |
| 38 | MANICKAVEL.M | 1977627 | 13 | MALE | MELAPPATTY | KARUR | KARUR | RE-TREMATUDE INDUCED UVEITIS |
| 39 | VINOTH.J | 1977642 | 13 | MALE | ALANGUDI | | PUDUKKOTTAI | RE-TREMATODE INDUCED GRANULOMA |
| 40 | VINOBHARATHI.B | 1973885 | 13 | MALE | ARIYANUR | VEERAPANDI | SALEM | FUCH'S HETEROCHROMIC IRIDOCYCLITIS |
| 41 | KANNAN.R | 1972405 | 13 | MALE | PITCHAMPATTI | KARIAPATTI | VIRUDHUNAGAR | RE-MULTIFOCAL CHOROIDITIS TB |
| 42 | SARATH.S | 1958310 | 15 | MALE | KOLENCHIRA | PALA | KOTTAYAM[KERALA] | HLA B27 RELATED NON GRANULOMATOUS ANTERIOR UVEITIS |
| 43 | HASIR.M | 1957938 | 10 | MALE | NAGORE | | NAGAPATTINAM | LE TREMATODE INDUCED UVEITIS |
| 44 | MANIMALA.M | 1957757 | 12 | FEMALE | K.O.N.PALAYAM | PATTUKOTTAI | TANTORE | BE-HEALED CHORIO RETINAL SCAR+RE MACULAR INVOLVEMENT |
| 45 | DEEPAK JUSTIN.S | 1953930 | 10 | MALE | VARAGANERI | TIRUCHIRAPALLI | TIRUCHIRAPALLI | BE-PARS PLANITIS |
| 46 | RAHAMATHU NISHA.M | 1951416 | 9 | FEMALE | KOTTAIPATTINAM | MANAMELKUDI | PUDUKKOTTAI | LE-TREMATODE INDUCED UVEITIS |
| 47 | KALAIVANI.V | 1951057 | 15 | FEMALE | KAMARAJAPURAM/ THIRUPAPCHATHY | SIVAGANGAI | SIVAGANGAI | LE EPI SCLERITIS |
| 48 | SARALA DEVI.N | 1950769 | 15 | FEMALE | NADUVAKARAI | POUNDRIGAPURAM/ KUMBAKONAM | TANJORE | LE-ACUTE ENDOGENOUS ENDOPHTHALMITIS |
| 49 | MARIYAM SHIFA.M | 1946205 | 15 | FEMALE | G.SENTUGE | MALE | MALE/ MALDIVES | BE OLD TOXOPLASMIC RETINITIS |
| 50 | AKSHAY.V | 1939810 | 5Y 6M | MALE | SEKARIPURAM | PALAGHAT | PALGHAT [KERALA] | BE-PARS PLANITIS |
| 51 | VIJAYARANI.G | 1936294 | 15 | MALE | VALLALAPATTI | AMMACHATHIRAM | PUDUKOTTAI | BE RECCURENT EPISCLERITIS |
| 52 | KANNIKA.S | 1933374 | 10 | FEMALE | NAGERKOIL | | KANNIYAKUMARI | BE-RECCURENT GR. ANT UVEITIS |
| 53 | HAFIZ.T.K | 1891229 | 3 | MALE | CHALIYAM | KOZHIKODE | KOZHIKODE [KERALA[ | RE-TREMATODE A.C. GRANULOMA+ LE CONJ CYST |
| 54 | MANIKANDAN.V | 1824105 | 13 | MALE | ADIRAMAPATTINAM | TANJORE | TANJORE | RE-RECCURENT PARS PLANITIS |
| 55 | PARTHASARATHI.S | 1818221 | 13 | MALE | REDDIAR CHATTIRAM | DINDIGUL | DINDIGUL | RE RECCURENT EPISCLERITIS+LE-SCLEROKERATITIS |
| 56 | SHIKHA SHAJI.S | 1811981 | 12 | FEMALE | MAVELIKARA | ALLEPEY | ALLEPEY [KERALA] | BE-CHORIORETINAL GRANULOMA-SARCOIDOSIS |
| 57 | ISWARAN.M | 1758946 | 10 | FEMALE | MAYILADUTHURAI | NAGAPPATINAM | NAGAPATTINAM | LE-A.C. GRAULOMA-TB/SARCOID |
| 58 | VIJAYA KALESWARI.M | 1743961 | 12 | FEMALE | SIVAKASI | SIVAKASI | VIRUDHUNAGAR | RE- TB CHOROIDITIS |
| 59 | VIJAY.M | 1678003 | 8 | MALE | KUMBAKONAM | KUMBAKONAM | TANJORE | LE-PARS PLANITIS |
| 60 | ALINA ANTONY.A | 1973570 | 3 | FEMALE | CHANAGACHERRY | KOTTAYAM | KOTTAYAM[KERALA] | RE-ANTERIOR UVEITIS-TB_COMPLICATED CATARACT |

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| 61 | RENU PRIYA.S | 1570295 | 3 | FEMALE | ELLIS NAGAR/MADURAI | MADURAI | MADURAI | RE- PARS PLANITIS-TB/SARCOID |
| 62 | YASMIN.M | 1516389 | 15 | FEMALE | PARTHIBANOOR | RAMANATHAPURAM | RAMANATHAPURAM | BE- RETINAL VASCULITIS |
| 63 | JAMAL UMMAR.H | 2013548 | 13 | MALE | SIVAKASI | | VIRUTHUNAGAR | RE- HEALED CHORIO RETINAL PATCH-TOXOCARA/TOXOPLASMA |
| 64 | PAVITHRA.S | 2012744 | 6 | FEMALE | SEKKALAI | KARAIKUDI | SIVAGANGAI | LE-VIRAL KERATO UVEITIS-POST MUMPS |
| 65 | SATHISH KUMAR.S | 2010675 | 9 | MALE | MUTHUPATHY | SIVAGANGAI | SIVAGANGAI | LE FOCAL VASCULITIS |
| 66 | SONARAJU.R | 2010132 | 7 | FEMALE | ERAMATHOOR | CHENNITHALA/ MANNAR/ ALLEPEY | ALLEPEY [KERALA] | LE- TOXOCARA GRANULOMA/ CHRONIC POSTERIOR UVEITIS |
| 67 | PRIYADHARSHINI.V | 2007376 | 2 | FEMALE | KEELAKADAMBUR | MELAKADAMBUR/ KATTUMANNARKOIL | CUDDALORE | BE-ARN |
| 68 | MURUGANANDAM.P | 1999759 | 15 | MALE | REDDIPALAYAM/ VINAHAGAI P.O | PRIYALUR | PERAMBALUR | LE-FUCH'S HETEROCHROMIC IRIDOCYCLITIS+COMPLICATED CATARACT |
| 69 | MUSTAFA.M | 1999736 | 15 | MALE | PUDUPARAMBIL | MALAPPURAM | MALAPPURUM | RE- TREMATODE INDUCED A.C. GRANULOMA+LOCALISED CATARACT |
| 70 | RADHA.S.M | 1994718 | 15 | FEMALE | SIMMAKKAL | MADURAI | MADURAI | RE- CYSTICERCOSIS VITRITIS+INTRAOCULAR CYSTICERCOSIS |
| 71 | SAM.A | 1993530 | 13 | MALE | BATLAGUNDU | DINDIGUL | DINDIGUL | RE-CHRONIC N.G. INTERMEDIATE UVEITIS-LEPTOSPIRAL/ TB |
| 72 | VIMAL RAJ.K | 1989819 | 14 | MALE | THIRUPUGALUR | NAGAPPATINAM | NAGAPATTINAM | BE- PAN UVEITIS-TB |
| 73 | VIJAYALAKSHMI.S | 1988831 | 14 | MALE | MAPPADUGAI | MAYILADUTHURAI | NAGAPATTINAM | LE- OLD RESOLVED UVEITIS / TOXOCARA GRANULOMA |
| 74 | KANNAN.R | 1971596 | 14 | MALE | GUDULUR | | THENI | BE-VKH |
| 75 | DHANYA. T . THOMAS | 1934182 | 16 | FEMALE | BETHAL P.O. | IDUKKI | IDDUKI [KERALA] | LE-IRIS GANULOMA-TB |
| 76 | ALEXA MICHAEL.J | 2048149 | 5 | FEMALE | NEENDOOR | KOTTAYAM [KERALA] | KOTTAYAM[KERALA] | BE-VKH |
| 77 | THAMIMA.M | 2030060 | 5 | FEMALE | MARAIKKAVALASAI /UDAYANADU/ P. O | PERAVOORANI | TANJORE | LE-TRAUMATIC UVEITIS/FUNGAL ENDOPHTHALMITIS/PHACOANAPHYLACTIC UVEITIS |
| 78 | CHAITANYA.V | 2017578 | 7 | MALE | KRISHNA | | KRISHNA [A.P.] | BE-PARS PLANITIS |
| 79 | NAINA AGARWAL.R | 2010787 | 10 | FEMALE | ROURKELA | SUNDARGARH | SUNDARGARH [ORISSA] | BE-PARS PLANITIS TB |
| 80 | FASNA.K | 2104915 | 15 | FEMALE | NILAMBUR | MALAPPURAM | MALAPPURAM [KERALA] | LE-VASCULITIS |
| 81 | ANJANA MOHAN.M | 2104666 | 12 | FEMALE | UPPUTHARA-KATTAPPANA | IDUKKI | IDDUKI [KERALA] | LE-JUXTA PAPPILARY CHRIO RETINITIS |
| 82 | KAVIN KUMAR.P | 2098187 | 9 | FEMALE | PERAMBALUR | | PERAMBALUR | BE- PARS PLANITIS |
| 83 | PRASHANTHI.R | 2091622 | 14 | FEMALE | PUDUKOTTAI | PUDUKOTTAI | PUDUKOTTAI | BE-VKH |
| 84 | BENASIR BEGAM.S | 2089212 | 12 | FEMALE | MEENAKSHIPURAM | KARAIKUDI | SIVAGANGAI | LE-TREMATODE INDUCED A.C. GRANULOMA |
| 85 | THIRUPATHAMMA.V | 2080450 | 15 | FEMALE | BUCHINAYA KADRIGA | CHITTOOR | CHITTOR [A.P.] | RE TRAUMATIC UVEITIS] |
| 86 | HARI KRISHNAN.P | 2097118 | 8 | MALE | KODAMPAKKAM | CHENNAI | CHENNAI | BE INTERMEDIATE UVEITIS JRE/TB |
| 87 | PRIYANKA.S | 2071102 | 9 | FEMALE | MATHU KANMAI / AUDISURULI P.O. | KALAYARKOIL | SIVAGANGAI | LE-TOXOPLASMA ENDOPHTHALMITIS |
| 88 | NAMBU.M | 2071102 | 9 | FEMALE | KOTTAI PATTINAM | ARANTHANGI | PUDUKKOTTAI | LE- TREMATODE INDUCED A.C. GRANULOMA |
| 89 | DINESH KUMAR.N | 2049690 | 15 | MALE | THIRUCHENGODE | | NAMAKKAL | LE-ARN |
| 90 | ARUNKUMAR.K | 1631089 | 15 | MALE | PANRUTTI | PANRUTTI | CUDDALORE | BE- PARS PLANITIS |

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| 91 | MUTHU SELVI.M | 1924937 | 9 | FEMALE | PERUMALPURAM | TIRUNELVELI | TIRUNELVELI | BE- RETINOCHOROIDITIS |
| 92 | ARUNJUNAIKUMAR.M | 2039594 | 6 | MALE | NAGALINGAM COMPOUND /MADURAI | | MADURAI | LE-PARS PLANITIS |
| 93 | MARTIN LUTHER.A | 2049781 | 13 | MALE | PANDIAN NAGAR /VIRUDHU NAGAR | | VIRUDHUNAGAR | RE- RETINAL VASCULITIS |
| 94 | SRI KUMAR.S | 2056455 | 12 | MALE | MUHAMMA | ALLEPEY | ALLEPEY [KERALA] | LE- CHRONIC N.G PANUVEITIS VIRAL/ TB /SYPHILIS |
| 95 | ASHOK.T.R | 2058547 | 7 | MALE | PARAVAI | MADURAI | MADURAI | RE- ENDOGENOUS ENDOPHTHALMITIS |
| 96 | DINESH KUMAR.E | 2060243 | 15 | MALE | VEPPANAM PUDUR | VASANTHAPURAM P.O. | NAMAKKAL | RE- R.D. INDUCED UVEITIS |
| 97 | MANIKUMAR.K | 2064510 | 15 | MALE | KOTTAIKALAM | ANDIPATTU | THENI | IDIOPATHIC INTERMEDIATE UVEITIS |
| 98 | AISWARYA.K | 2065306 | 1 | FEMALE | UPPARAPATHY | UTHANKARAI | KRISHNAGIRI | RE- ENDOGENOUS ENDOPHTHALMITIS |
| 99 | RAJABUNISHA.S | 2069919 | 12 | FEMALE | GOPALAPATTINAM | MEEMISAL | PUDUKKOTTAI | PUDUKKOTTAI |
| 100 | KUMAR.K | 2072890 | 15 | MALE | VIRUTHUNAGAR | | VIRUTHUNAGAR | LE-TRAUMATIC UVEITIS |
| 101 | VISHNU.B | 2015737 | 8 | MALE | KAYAKKAL | PAIMARA | KOZHIKODE [KERALA] | RE- TREMATODE INDUCED UVEITIS/ GRANULOMA |
| 102 | PANDEESWARAN.S | 2015014 | 6 | MALE | THIRUVIRUDAN PATTI / SETTUDUIYAN PATTI. P.O. | SATHUR | VIRUDHUNAGAR | RE- TREMATODE INDUCED GRANULOMA |
| 103 | SARATH.S | 2014525 | 14 | MALE | KALIMANOOR | TRIVANDRUM | TRIVANDRUM [KERALA] | RE- RETINO CHOROIDITIS |
| 104 | ARULANANDI.S | 2014355 | 15 | MALE | UTHAMAPALAYAM | | THENI | LE FUCH'S HETEROCHROMIC IRIDOCYCLITIS |
| 105 | VIGNESH.G | 1995205 | 15 | MALE | KOVILPAPPAKUDI | MADURAI | MADURAI | LE-TRAUMATIC UVEITIS |
| 106 | NASEERA.S | 1979275 | 14 | FEMALE | MASUTHIPURAM /KALAVAIMANDAL | NELLORE | NELLORE [A.P.] | LE- MACULAR CHOROIDITIS |
| 107 | NAMBI.M | 2049951 | 7 | FEMALE | KOTTAIPATTINAM | ARANTHANGI | PUDUKKOTTAI | LE- TREMATODE INDUCED A.C. GRANULOMA |
| 108 | PRAVEEN.R | 2043982 | 10 | MALE | THIRUKAMPULIUR | KARUR | KARUR | BE-ACUTE POSTERIOR UVEITIS |
| 109 | CHELLA PANDI.P | 2039927 | 8 | MALE | THIRUMALAPURUM | MADURAI | MADURAI | LE- TB ANTERIOR UVEITIS |
| 110 | PETCHIAMMAL.M | 2033677 | 5 | FEMALE | KONDAMPATTI /AYYANAPURAM P.O. | USILAMPATTI | MADURAI | |
| 111 | VIDYALAKSHMI.S | 2032560 | 10 | FEMALE | PONDICHERRY | | PONDICHERRY | RE-POSYERIOR UVEITIS |
| 112 | MOKSHA.S | 2025228 | 4 | FEMALE | ERODE | | ERODE | BE- CHRONIC UVEITIS- JRA/ SARCOIDOSIS |
| 113 | JAYARAMAN.R | 2025176 | 9 | MALE | USILAMPATTI | | MADURAI | BE-PARS PLANITIS |
| 114 | BEULA.K | 2018255 | 15 | FEMALE | PERULAMPATTI | ETTAYAPURAM | TUTICORIN | LE -NON GRANULOMATOUS PAN UVEITIS |
| 115 | RAJAMOHAN.G | 1988070 | 12 | MALE | PATHUKATTU/ MANICKAPANTHA. P.O. | THARNGAMPADI | NAGAPATTINAM | RE- TREMATODE INDUCED A.C. GRANULOMA |
| 116 | ABDUL RAHUMAN.S | 1932196 | 15 | MALE | JEEVANAGAR | MADURAI | MADURAI | ANTERIOR UVEITIS |
| 117 | PRINCE.M | 1971188 | 12 | MALE | SHENBAGANUR | KODAIKANAL | DINDIGUL | RE- CMV RETINITIS+HIV |
| 118 | MUTHURAMU | 2116976 | 15 | MALE | KALYANAPOONDI | VILLUPURAM | VILLUPURAM | R.D.INDUCED UVEITIS |
| 119 | ABDUL THARIK | 2104771 | 17 | MALE | GUDALUR | THENI | THENI | INTERMEDIATE UVEITIS |
| 120 | ROZARIO PAUL | 2089184 | 10 | MALE | RATHINAPURI | COIMBATORE | COIMBATORE | PARS PLANITIS |

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|---|---|---|---|---|---|---|---|---|
| 121 | PRASHANTHI. | 2091622 | 14 | MALE | CHARLES NAGAR | PUDUKOTTAI | PUDUKKOTTAI | VKH |
| 122 | NARAYANAN | 2118474 | 16 | MALE | ODAIPATTI | MADURAI | MADURAI | TRAUMATIC UVEITIS |
| 123 | NAVEEN BHARATHI | 2118870 | 11 | MALE | THATHANERI | MADURAI | MADURAI | ANTERIOR UVEITIS |
| 124 | SANGEETHA | 2118703 | 11 | MALE | SEMBATTUR | RAJAKULATHUR | PUDUKKOTTAI | TOXOPLASMOSIS UVEITIS |
| 125 | KARTHIGAI SELVI | 2119947 | 17 | FEMALE | VELLIKURICHI | THIRUPPACHITHI | SIVAGANGAI | HEALED TOXOPLASMOSIS |
| 126 | PARTHIBAN | 2108813 | 14 | MALE | UTHUKULI | VADIPATTI | MADURAI | ACTE RETINAL NECROSIS |
| 127 | SUNDAR | 2121337 | 16 | MALE | VASUDEVANALLUR | SIVAGIRI | THIRUNELVELI | VASCULITIS+ CHRONIC GRANULOMA |
| 128 | INDRA | 2107261 | 15 | FEMALE | MULLIPPADI | THIRUCHIRAPALLI | THIRUCHIRAPALLI | PARS PLANITIS |
| 129 | KANAGARAJ | 2042838 | 14 | MALE | VANAGAPURAM | KAMUDHI | RAMANATHAPURAM | TUBERCULOSIS |
| 130 | MD.ASIF | 2121414 | 18 | MALE | GANDHAKOALHI MAGU | M.FAIRY LIGHT | MALDIVES | TOXOPLASMOSIS UVEITIS |
| 131 | SEETHALAKSHMI | 1934148 | 13 | FEMALE | VILLAPURAM | MADURAI | MADURAI | NODULAR SCELERITIS |
| 132 | THANGARAJ | 2099532 | 14 | MALE | WATAP | SRIVILLIPUTHUR | VIRUDHUNAGAR | VKH |
| 133 | SAYED ABDUL JAFER | 21247261 | 14 | MALE | ULAVAPADU | PRAKASAM | PRAKASAM | TOXOPLASMOSIS UVEITIS |
| 134 | TAMILSELVAN | 1293506 | 11 | MALE | RAMESWARAM | RAMANATHAPURAM | RAMANATHAPURAM | SARCOID |
| 135 | SACHIN | 2126428 | 8 | MALE | SATHINAKULAM | KOLLAM | KOLLAM | PARS PLANITIS |
| 136 | CHELLADURAI | 1944557 | 17 | MALE | NEW NAGAR | CUDDALORE | CUDDALORE | CHRONIC ANTERIOR UVEITIS |
| 137 | ARSATH ALI | 191696 | 5 | MALE | SHOLAPURAM | KUMBAKONAM | TANJORE | PAN UVEITIS |
| 138 | VEERALAKSHMI | 1740147 | 12 | FEMALE | ALLINAGARAM | THENI | THENI | RESOLVED PARS PLANITIS |
| 139 | POWSAL HG | 2127678 | 10 | MALE | S.P. PATTINAM | RAMANATHAPURAM | RAMANADHAPURAM | TREMATODE INDUCED A.C. GANULOMA |
| 140 | MAVEERAN | 2127550 | 8 | MALE | SATHAM PADI | NATHAM | DINDIGUL | TOXOPLASMOSIS/ EXUDATIVE VASCULOPATHY |
| 141 | MUNEES KUMAR | 2113350 | 10 | MALE | VANNANKUTTAI/ MEEMISAL | AVUDAIYARKOVIL | PUDUKKOTTAI | TREMATODE INDUCED A.C. GANULOMA |
| 142 | SUBIN JOY | 2123400 | 9 | MALE | VALLAMKULAM | PATHANAMTHITTA | PATHANAMTHITTA[KERALA] | POSTERIOR UVEITIS |
| 143 | DHIVAKAR | 2083891 | 7 | MALE | MELAKUDIERUPPU | JEYAMKONDAM | PERAMBALUR | TREMATODE INDUCED A.C. GANULOMA |
| 144 | NISHA | 2113245 | 3 | FEMALE | UDUMBANCHOLA | IDUKKI | IDDUKI [KERALA] | ENDOGENOUS ENDOPHTHALMITIS |
| 145 | AJITHKUMAR | 2131042 | 9 | MALE | NARIPAIYUR | RAMANADHAPURAM | RAMANADHAPURAM | TUBERCULOSIS |
| 146 | SABARI NANDINI | 2131838 | 10 | FEMALE | KOTTAYUR | KARAIKUDI | SIVAGANGAI | VKH |
| 147 | SAHUL HAMEED | 1986543 | 7 | MALE | ODDANCHATRAM | ODDANCHATRAM | DINDIGUL | SARCOIDOSIS |
| 148 | BALA SUBRAMANI | 2113557 | 16 | MALE | UDAYANATHAPURAM | ARUPPUKOTTAI | VIRUTHUNAGAR | RETINAL VASCULITIS |
| 149 | KANNAN.K | 2053803 | 16 | MALE | VELLAKULAM | THIRUMANGALAM | MADURAI | TUBERCULOSIS |
| 150 | PRATHAB | 2136153 | 11 | MALE | VARASUNADU | THENI | THENI | ANTERIOR UVEITIS |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 151 | JIJU | 1797114 | 17 | MALE | KUNHIMANGALAM | KANNUR | KANNUR/[KERALA] | SARCOIDOSIS |
| 152 | SARANYA | 2132199 | 17 | MALE | AVANIYAPURAM | MADURAI | MADURAI | PARS PLANITIS+SARCOIDOSIS |
| 153 | DEV ANAND | 1467427 | 13 | MALE | VADUGAPATTI | PERIAKULAM | THENI | PARS PLANITIS |
| 154 | PRIYANKA. | 2071102 | 9 | FEMALE | ANDISURULI | KALAYARKOIL | SIVAGANGAI | PARS PLANITIS |
| 155 | MAI MOONA | 2143063 | 12 | FEMALE | KUTHUPARAMBU | ERUVATTY | KANNUR/[KERALA] | JRA |
| 156 | SHAHANA | 1073263 | 12 | FEMALE | KAYAMKULAM | ALLEPEY | ALLEPEY [KERALA] | PAN UVEITIS |
| 157 | MANGAYARKARASI | 2144542 | 12 | FEMALE | SAMAYAPURAM | LALGUDI | TIRUCHIRAPALLI | VIRAL UVEITIS |
| 158 | RAMACHANDRAN | 2140600 | 17 | MALE | CHATHIRA REDDIARPATTY | VIRUDHUNAGAR | VIRUDHUNAGAR | TUBERCULOSIS VASCULITIS |
| 159 | SUSEELA | 2145719 | 10 | FEMALE | KUNNATHU VEEDU/ AIRAMAM | KOLLAM | KOLLAM [KERALA] | BILATERAL CHRONIC UVEITIS |
| 160 | IBRAHIM MUFLILI.H | 2145727 | 14 | MALE | HOTEL HIGH LAND | TRIVANDRUM | TRIVANDRUM [KERALA] | TOXOPLASMOSIS SCAR |
| 161 | LEEMA CATHRINE | 2149563 | 16 | FEMALE | THENKARAI | PERIYAKULAM | THENI | LEPTOSPIROSIS |
| 162 | VELMURUGAN | 2149536 | 15 | MALE | VIRUSAMATHU URANI/ AIR PORT ROAD | MADURAI | MADURAI | BILATERAL GRANULOMATOUS UVEITIS |
| 163 | RAMKUMAR | 2150273 | 17 | MALE | THIRUMANGALAM | THIRUMANGALAM | MADURAI | CHRONIC NONGRANULOMATOUS ANTERIOR UVEITIS |
| 164 | LAKSHMI MANIKANDAN | 2150495 | 14 | MALE | BAGATH NAGAR | PALAKOL VIL | WEST GODAVARI | MULTI FOCAL CHOROIDITIS |
| 165 | HIMA STEPHAN | 2151884 | 14 | FEMALE | KERALAPURAM | KOLLAM | KOLLAM | POSTERIOR UVEITIS |
| 166 | RAJA DURAI | 2060957 | 11 | MALE | KODIKULAM | MADURAI | MADURAI | ?VIRAL/ ?TUBERCULOSIS |
| 167 | BABY MUSKAN JAIN | 1975726 | 7 | FEMALE | SARNI/ BATAL | BATALGEN | BETAL GEN{M. P.] | PARS PLANITIS |
| 168 | VIGNESWARAN | 1685409 | 17 | MALE | THIRUPARAMKUNDRAM | MADURAI | MADURAI | ?LEPTOSPIROSIS |
| 169 | KARUPPASAMY | 2152764 | 16 | MALE | PANTHALKUDI ROAD | ARUPPUKOTTAI | VIRUDHUNAGAR | SCLERITIS |
| 170 | DHARANI | 2148580 | 5 | FEMALE | VASANTHA NAGAR | TIRUCHIRAPALLI | TIRUCHIRAPALLI | SUBRETINAL GANULOMA/ ?T.B |
| 171 | THANGAMANI | 1991076 | 17 | MALE | PUDUPATTY | EDAYAMELUR | SIVAGANGAI | VASCULITIS |
| 172 | TAMILARASI | 2153420 | 15 | FEMALE | THONDAMANKINOM | KRISHNARAYAPURAM | KARUR | RECURRENT EPISCLERITIS |
| 173 | SEKAR | 609141 | 14 | MALE | ALAGUDEVADIAPURAM | SRIVILLIPUTHUR | VIRUDHUNAGAR | INTERMEDIATE UVEITIS |
| 174 | SILPA | 2153253 | 9 | FEMALE | LAIKADU | CHANGANCHERU | KOTTAYAM[KERALA] | D U S N |
| 175 | KRISHNA PRASAD | 1641170 | 25 | MALE | KARAMCHEDU | PRAKASAM | PRAKASAM{A.P.] | INTERMEDIATE UVEITIS |
| 176 | MARESWARI | 609540 | 13 | FEMALE | SETTUR | VIRUDHUNAGAR | VIRUDHUNAGAR | LENS PROTEIN INDUCED UVEITIS |
| 177 | ANITHA | 2154682 | 17 | FEMALE | PUDUKKOTTAI | | PUDUKKOTTAI | LEPTOSPIROSIS UVEITIS |
| 178 | RAMESH KUMAR | 2027066 | 19 | MALE | K.PUDUR | MADURAI | MADURAI | NON GRNULOMATOUS UVEITIS |
| 179 | ANANDHA MEENAKSHI | 991514 | 17 | FEMALE | SELLUR | MADURAI | MADURAI | NON GRANULOMATOUS ANTERIOR UVEITIS |
| 180 | VENKATESWARAN | 1555353 | 13 | MALE | SAMAYANALLUR | VADIPATTY | MADURAI | SCLERITIS |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 181 | DHANA LAKSHMI | 21555828 | 17 | FEMALE | MANAMADURAI | | SIVAGANGAI | RECURRENT EPISCLERITIS |
| 182 | SHANMUGA PRABHU | 1824564 | 17 | MALE | THIRUVEGAMBATHUR | SIVAGANGAI | SIVAGANGAI | VKH |
| 183 | VELARASI | 610218 | 9 | FEMALE | K.KULATHUKURICHI | VRIDDHACHALAM | CUDDALORE | ?TUBERCULOSIS |
| 184 | RAJA | 2156017 | 8 | MALE | PENNAGARAM | PENNAGARAM | DHARMAPURI | TREMATODE INDUCED A.C. GANULOMA |
| 185 | VIKRAM | 2152129 | 1Y 6M | MALE | ANKIRANPATTY | KULAVAIPATTY | PUDUKKOTTAI | ANTERIOR UVEITIS |
| 186 | SUGANYA | 1645282 | 13 | FEMALE | BHEL TOWNSHIP | TIRUCHIRAPALLI | TIRUCHIRAPALLI | PAN UVEITIS |
| 187 | ANU | 2157001 | 13 | FEMALE | PALAIGRAM | UDUMBANCHOLA | IDUKKI[KERALA] | TOXOPLASMOSIS |
| 188 | POOJITHA | 2157119 | 4 | FEMALE | ONGOLEMANDAL | PRAKASAM | PRAKASAM | GRANULOMATOUS UVEITIS |
| 189 | PONNAMAL | 2158988 | 17 | FEMALE | PADAMATHUR | SIVAGANGAI | SIVAGANGAI | NON GANULOMATOUS UVEITIS |
| 190 | MUTHU KUMAR | 611784 | 16 | MALE | K.K.NAGAR | MADURAI | MADURAI | BILATERAL MULTIFOCAL CHOROIDITIS |
| 191 | SULFIYA SUHAIL | 2160297 | 14 | FEMALE | KUREEPALLI VIL | KOLLAM | KOLLAM[KERALA] | TOXOPLASMOSIS |
| 192 | NESAMANI KANDAN | 2160794 | 13 | MALE | NARIMEDU / GORIPALAYAM | MADURAI | MADURAI | NON GRANULOMATOUS ANTERIOR UVEITIS |
| 193 | LIJO SUNY | 1015573 | 16 | MALE | PUNALUR | QUILON | KOLLAM[KERALA] | PARS PLANITIS |
| 194 | SHANMUGARAJ | 2161885 | 17 | MALE | DURAISAMYPURAM/KOMBAI | UTHAMAPALAYAM | THENI | HLA B27 RELATED ANTERIOR UVEITIS |
| 195 | SUNDARESWARI | 613467 | 16 | FEMALE | KULAMANGALAM | MADURAI | MADURAI | LEPTOSPIROSIS |
| 196 | JAGADEESWARI | 1942769 | 17 | FEMALE | CUMBAM | | THENI | SCLERO KERATITIS ?TB |
| 197 | PREMA | 613445 | 9 | FEMALE | VALLUVAR NAGAR | KRISHNAGIRI | KRISHNAGIRI | PERIPHERAL GRANULOMA |
| 198 | AMAITHI SANGU | 2162210 | 14 | FEMALE | SIVAGANGAI | | SIVAGANGAI | SCLERITIS |

| S.NO | NAME | AGE | SEX | TYPE OF WATER CONTACT | NATURE OF WATER BODY | E OF CONTACT FROM HOME | TIME OF WATER CONTACT | DURATION OF WATER CONTACT | TO PLACES CONTAININ G WATER BODIES | INVOLVED EYE | BCVA IN INVOLVED EYE | IOP IN INVOLVED EYE | SIZE OF GRANULOMA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | NAVBAS KHAN.K | 16 | MALE | A,B,E | B | B | A,B | C | 1 | LE | 6\|6 | 18 | B |
| 2 | VASANTHA RAJA.N | 13 | MALE | A,B,C | B | B | B,C | B | 1 | RE | 6\|6 | 14 | B |
| 3 | VINOTH.J | 13 | MALE | A,C,E | B | A | B,D | B | 1 | LE | 6\|6 | 15 | B |
| 4 | MANICKAVEL.M | 13 | MALE | A,B,C,E | B | B | A,C,D | B | 2 | RE | 6\|6 | 18 | B |
| 5 | HASIR.M | 10 | MALE | A,B,C | A | B | A,B,D | B | 2 | RE | 6\|6 | 15 | B |
| 6 | RAHAMATHU NISHA.M | 9 | FEMALE | C, D, E | B | A | D | A | 1 | LE | 6\|6 | 14 | B |
| 7 | MUSTAFA.M | 15 | MALE | A,B,C,E | B | A | A,B,C,D | C | 2 | RE | 6\|6 | 12 | B |
| 8 | BENASIR BEGAM.S | 12 | FEMALE | C, D, E | B | A | B,D | A | 2 | RE | 6\|6 | 12 | B |
| 9 | NAMBU.M | 7 | FEMALE | C, D, E | B | A | B | A | 1 | LE | 6\|6 | 18 | B |
| 10 | RAJA MOHAN.G | 12 | MALE | A,B,C,E | A | A | B,D | B | 2 | RE | 6\|9 | 12 | B |
| 11 | VISHNU.B | 8 | MALE | A,C | B | A | B,D | A | 1 | LE | 6\|6 | 15 | B |
| 12 | PANDEESWARAN.S | 6 | MALE | *A ,C ,E* | A | A | A,D | A | 2 | LE | 6\|6 | 12 | B |
| 13 | NAMBI.M | 7 | FEMALE | A,C,D, E | B | A | B | A | 2 | RE | 6\|6 | 12 | B |
| 14 | VIJAY.K | 7 | MALE | A,C | A | A | A,B,D | A | 2 | LE | 6\|6 | 16 | B |
| 15 | HAFIZ.T.K | 3 | MALE | C | B | A | B | A | 2 | RE | 6\|6 | 17 | A |
| 16 | POWSAL HG | 10 | MALE | *A ,C ,E* | B | A | B,C | C | 1 | LE | 6\|12 | 26 | C |
| 17 | MUNEES KUMAR | 10 | MALE | A, C | B | A | A | B | 1 | LE | 6\|9 | 16 | B |
| 18 | DHIVAKAR | 7 | MALE | A, C | B | A | D | A | 2 | RE | 6\|6 | 11 | B |
| 19 | RAJA | 8 | MALE | A,B,C,E | B | A | B,D | A | 2 | LE | 6\6 | 19 | B |
| | | | | | | | | | | | | | |
| EXPLANATION | PROPER NOUNS | YEARS | GENDER | A=SWIMMING | A=RIVER | A=LESS THAN 1/2 KM | A=6 TO 9 A.M | A= LESS THAN 1/2 HOUR | 1= YES | SIDE OF INVOLVED EYE | BEST CORRECTED SNELLEN"SV/A | Tn Pulsair in *mm of Hg* | A=LONGEST DIMENSION< 1 MM |
| | | | | B=FISHING | B=POND/ LAKE | B=1/2 TO 1 KM | B=9 TO 12 NOON | B =1/2 TO 1 HOUR | 2= NO | | | | DIMENSION 1 TO 2 MM |
| | | | | C=BATHING | | | C= 12 TO 3 P.M | C=1 TO 2 HOUR | | | | | C=LONGEST DIMENSION > 2 MM |
| | | | | D=COLLECTING WATER | | | D= 3TO 6 P.M | | | | | | |
| | | | | E=WASHING CLOTHES | | | | | | | | | |